

BURNED AREA EMERGENCY STABILIZATION PLAN

HACKBERRY COMPLEX

AGENCY/UNIT: National Park Service
Mojave National Preserve

LOCATION: Primm, Nevada

DATE: July 5, 2005

PREPARED BY: National-Interagency Burned Area Emergency
Response Team (Smith)



Submitted By: _____
Mary G. Martin, Superintendent, Mojave National Preserve

**BURNED AREA EMERGENCY STABILIZATION PLAN
HACKBERRY COMPLEX**

REVIEW AND APPROVAL -- NATIONAL PARK SERVICE

I. EMERGENCY STABILIZATION PLAN CONCURRENCE

- ☐ **Concur**
- ☐ **Concur with Revision**
- ☐ **Disapproved**

Explanation for Revision or Disapproval:

Mary G. Martin, Superintendent, Mojave National Preserve

Date

II. EMERGENCY STABILIZATION PLAN APPROVAL

- ☐ **Concur**
- ☐ **Concur with Revision**
- ☐ **Disapproved**

Explanation for Revision or Disapproval:

Mike Wallace, NPS, NIFC Fire Director

Date

BURNED AREA EMERGENCY STABILIZATION PLAN

HACKBERRY COMPLEX FIRES

EXECUTIVE SUMMARY

This plan addresses emergency stabilization of fire effects resulting from the Hackberry Complex fires. The plan has been prepared in accordance with the *Department of the Interior, Departmental Manual, Part 620: Wildland Fire Management, Chapter 3: Burned Area Emergency Stabilization and Rehabilitation* (September, 2003) and the *Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook* (June, 2001- Version 2.0). This document provides emergency stabilization for lands on the Mojave National Preserve administered by the National Park Service.

The primary objectives of the Hackberry Complex Fires Burned Area Emergency Stabilization are:

- To prescribe post-fire mitigation measures necessary to protect human life, property, and critical cultural and natural resources;
- To promptly mitigate the unacceptable effects of the fire on lands within and adjacent to the burned area in accordance with management policy guidelines and all relevant federal regulations.

The DOI Interagency Burned Area Emergency Response (BAER) Team has conducted an analysis of fire effects using aerial and ground reconnaissance methods throughout the fire area. The watershed group, composed of two hydrologists, assessed and mapped the overall fire impacts on watershed conditions and developed a soil burn severity map. Archaeologists inventoried suppression impacts for potential damage to cultural sites and known culturally significant sites that are threatened by post fire conditions. Archaeologists also initiated consultation with cultural resource staff of the Chemehuevi and Fort Mojave tribes along with the California State Historic Preservation Officer. The vegetation specialist evaluated and assessed fire effects and suppression impacts to vegetation resources, including noxious weed populations, and identified values at risk associated with vegetation losses. Three wildlife biologists conducted an assessment of fire effects to Threatened and Endangered wildlife (T&E) and state listed species and their associated habitat. The biologists also evaluated suppression impacts to wildlife species and initiated emergency Section 7 consultation with the U.S. Fish and Wildlife Service. The GIS specialists gathered data layers necessary for the plan, coordinated GPS activities, processed data calculations for other resource specialists, and produced maps for analysis, for the ES Plan, and for presentations.

Resource assessments produced by these specialists can be found in Appendix I and treatments identified in the assessments are located within Part F, Specifications. A summary of treatment costs is located within Part E. An Approval Page is provided as a signature page for agency review and approval. Appendix II contains the National Environmental Policy Act (NEPA) compliance summary for all recommended treatments. Appendix III contains photo documentation of fire effects while Appendix IV contains ES Plan maps. Appendix V contains supporting documentation.

Fire Location

The Hackberry Complex fires began on the MNP on June 22, 2005 at approximately 1200 hours as a dry lightning storm rolled through the Preserve. Three separate fires on Hackberry Mountain were reported by a San Bernardino County Road Department that eventually burned together to become the Hackberry Fire. At approximately 1700 hours a second storm rolled through the Preserve and two additional fires were reported near the Hole-in-the-Wall Visitor Center. These

fires became the Narrow and Wildhorse fires. The Brant Fire was reported at 1800 hours and the Ranch Fire was reported by residents at 1900 hours. The National Park Service requested a Type 2 Incident Management Team (SCIIMT1-Walker) to manage all fires as the Hackberry Complex. At the peak of the incident there were 1,133 personnel on the fire consisting of 200 overhead, 16 Type I crews, 8 Type 2 crews, 5 helicopters, four air tankers, two SEATs, 15 engine crews. The closeout for the Type II Team was on July 29 at which time a Type III team assumed responsibility for the fires. The cost to date to suppress the Hackberry Complex fires is approximately 3.1 million dollars. At the time of this report the fire had not been called controlled due to continuing fire activity within its perimeter.

Vegetation resources were impacted to varying degrees as fire intensities varied across the landscape. Combinations of wind, fuel, slope and plume driven fire behavior contributed to difficult suppression conditions. Thunderstorms moving through the area caused downburst winds with little to no precipitation over the fire area. Suppression resources were pulled back to safety zones several times during the incident. The Mojave Desert was lush with vegetation following a record-setting winter and therefore rates of spread were extreme.

Hackberry Complex fire suppression actions included construction of 2.3 miles of hand line and the use of four airtankers, two SEATs and five helicopters. Fire suppression forces impacted 47 miles of roads. In addition, associated suppression actions included 2 fire camps, and multiple helispots. Approximately 19,129 gallons of retardant, 30,000 gallons of foam, and 96,010 of wet water was delivered by aircraft.

Elevations range from 3,600 feet at the southern end of the Wildhorse Fire and the east side of Hackberry Fire, to 6,600 feet at the northern end of the Wildhorse Fire. Primary plant communities within the fire area include juniper, Joshua tree, Mojave yucca, piñon pine, creosote, big sagebrush, blackbrush, creosote-brittlebrush, and desert riparian vegetation.

Management

Management direction relevant to ES is contained within the 2000 General Management Plan (GMP) for Mojave National Preserve. This plan has been implemented to provide management direction until such time as step-down management plans can be approved. The GMP includes the following management objectives pertinent to the stabilization of burned areas:

- Current fire policy is to suppress all fires in the Preserve until fire history and effects studies are completed and the draft fire management plan is written and approved.
- Seek to perpetuate native plants and animals as part of the natural ecosystem.
- In natural areas, disturbances caused by natural phenomena such as landslides, earthquakes, floods, and natural fires will not be modified unless required for public safety, protection of NPS facilities, or necessary reconstruction of disperse-use facilities, such as trails.
- Identify, inventory, monitor and promote the conservation of all state and locally listed threatened, endangered, rare, declining, sensitive, fully protected, or candidate species that are native to and present in the Preserve, as well as their critical habitats.
- Protect the desert tortoise and its critical habitat regardless of its location or habitat designation throughout the park.
- Inventory, monitor and study "unusual" plant communities (meaning they may be particularly sensitive to disturbance, or are limited in distribution) to determine appropriate management actions.
- The management of populations of exotic plant and animal species, up to and including eradication, will be undertaken in accordance with NPS *Management Policies* wherever such invasive species threaten park resources or public health and when control is prudent and feasible.
- Identify, protect, preserve, and interpret archeological resource under its jurisdiction.

Other plans that contain management direction pertinent to the management of natural and cultural resources include:

- Draft Fire Management, Mojave National Preserve, December, 2004
- Managing Cultural Resources in the Mojave National Preserve: Prehistoric Site Distribution at Twelve Perennial Springs Sites.
- Draft Livestock Management Plan for the Mojave National Preserve
- Round Valley Allotment Management Plan
- Directors Order 41, Wilderness Management and Level 3 Reference Manual
- Principles for Wilderness Management in the California Desert

ISSUES AND OBJECTIVES

The BAER Team received an initial team briefing on June 27, 2005 at the Hole in the Wall Fire Center, Mojave National Preserve (MNP), National Park Service (NPS). The fire and resource staffs were present and provided valuable information concerning fire history, resources at risk, logistics, BAER plan issues and objectives.

Primary issues identified by the Tribes and NPS included:

- Protection of Life and Property – rock fall and erosion threats to private residences and impacts to visitor facilities
- Potential hazardous materials around burned homes and mine areas
- Public safety resulting from fire impacts to mines and historic wells; and potential impact to wildlife habitat (e.g. bats)
- Impacts to Threatened and Endangered species and their habitats
- Impacts to desert springs
- Impacts to desert tortoise, Bighorn sheep, and mule deer habitats
- Impacts to sensitive vegetation and regeneration of piñon pine
- Impacts to cultural resources
- Suppression impacts to cultural resources
- Non-native species invasion and loss of plant community biodiversity
- Hazard trees along Hole-in-the-Wall and Mid-Valley campground
- Impacts to public safety features such as signs for roads, trails, campgrounds, and boundaries
- Possible need for grazing deferral and feral burro control
- Impacts to state-listed T&E plant species
- Impacts to fences and control of livestock to protect treatments and/or allow for recovery
- Wilderness road closures
- Increase in blowing dust hazards

Between June 27 and July 1, 2005 the BAER Team conducted field investigations within the Hackberry Complex fires, interfaced with local resource advisors, program staff, landowners, permittees and researchers and evaluated emergency stabilization and documented long-term rehabilitation needs. Based upon field reviews and findings, the team has developed this plan to address the following issues:

- Protection of life, public safety, property, and critical cultural and natural resources.
- Protection of cultural and natural resource values impacted by the fire or fire suppression actions.
- Rehabilitation of roads, fences and other improvements impacted by the fire or the suppression of the fire.
- Assessment of Threatened and Endangered plant and animal species and their habitat.

- Rehabilitation requirements established by Federal law, policies, and relevant agency resource management mandates.
- Noxious weed and invasive species establishment and expansion within the fire area.
- Protect the ecological integrity of fragile desert ecosystems
- Implementation of treatments in a timely manner, prior to the first damaging storms.
- Short and long term impacts to vegetation.
- Protection of resource values including watershed stability, site productivity, wildlife habitat, vegetation resources and cultural resources.
- Imminent and long term tree hazard identification and mitigation
- Impacts to campground and visitor use facilities

Resource Assessments

Watershed

The purpose of a burned area assessment is to determine if the fire caused emergency watershed conditions and if there are values at risk from these conditions. The Interagency BAER Team hydrologists conducted aerial reconnaissance flights and field visits to review resource conditions after the fire. The main objectives of the field visits were to 1) evaluate soil burn severity and watershed response in order to identify potential flood and erosion source areas; 2) identify and inventory values at risk, 3) identify the physical and biological mechanisms that are creating risks; 4) review channel morphology and riparian conditions; 5) inspect hillslope conditions; and 6) determine needs for emergency stabilization. Values at risk are properties, capital improvements, and cultural resources located within or downstream of the fire that may be subject to damage from flooding, ash, mud and debris deposition, and hillslope erosion. Values at risk for the Hackberry Complex include:

- Homes and other structures,
- Campgrounds,
- Roads,
- Cultural resources

The Hackberry Complex was dominated by low soil burn severity. While fire intensity varied throughout the burn area, the rapid rate of fire spread through predominately fine fuels with light fuel loading, produced short fire residence times. The resulting burn severity is low throughout most of the burn area with some areas of moderate burn severity. Very small areas of high soil burn severity were observed in the Hackberry Complex. These areas are very limited and too small to map as individual units. They are limited to areas where pre-fire vegetation consisted of dense stands of piñon pine and juniper, under which deep layers of litter and duff had accumulated. These areas showed the effects of longer periods of intense heat as observed by the complete loss of surface organic materials and a deep ash layer. Surface soil structure does not appear to have been significantly altered. Nearly all soils within the burn area are inherently susceptible to wind erosion under unburned conditions. The fire consumed most of the shielding plant and litter cover, which provided wind protection and soil stability. The primary watershed response of this fire is expected to include: 1) an initial flush of ash and vegetation debris; and 2) small amounts of localized sediment erosion and deposition. Post-fire runoff and erosion are not expected to increase significantly over pre-fire levels.

Vegetation

MNP is a floristically diverse area, with over 900 species of vascular plants. The Hackberry complex burned through eleven distinct vegetation types, ranging from low elevation creosote to extensive stands of upper elevation juniper and piñon stands. MNP is a refuge for 103 species of rare plants as described by the State of California in conjunction with the California Native Plant Society. Up to 38 of these species may have been impacted by the fires. Issues relating to vegetation resources include fire impacts on rare plant populations, potential encroachment of

non-native exotic plants, potential effects of livestock grazing and visitor use of abandoned roads on native plant recovery, impacts to a registered tallest yucca tree, and natural regeneration of piñon in the Mid Hills Campground.

Emergency stabilization treatments recommended within this plan include the closure of abandoned road systems for the protection of plant community biological diversity; construction and repair of fence to allow grazing deferment; control and monitoring on non-native species; and monitoring of state listed sensitive species populations.

Wildlife

Endangered Species Act Section 7 Consultation has been initiated for federally listed species. It was determined that there was no significant effect to species included within the assessment caused by fire or suppression actions. The determinations documented in this assessment should be reassessed, and consultation conducted as needed, if additional emergency stabilization measures or vegetation management activities occur after July 05, 2005.

Cultural Resources

The Hackberry Complex fires cultural resource assessment addresses possible effects to 372 previously documented archaeological and cultural sites (348 prehistoric and 24 historic sites). Suppression impacts were minimal and no sites were impacted. A number of unrecorded historic sites containing wood structures were burned over. Five prehistoric and five historic sites were examined by the team. Rock art panels at one of the prehistoric sites sustained damage from soot accumulation and spalling. Wood elements at all five historic sites were consumed by the fire, and one prehistoric site may be affected by storm runoff. Looting and vandalism at all sites are a concern. Burro activity, particularly around springs, poses a risk to the integrity of archaeological resources. Four specifications were prepared to address potential effects and specific emergency stabilization needs: (1) Known Cultural Site Assessment; (2) Cultural Site Stabilization; (3) Increased Law Enforcement Patrol; and (4) Burro Removal. No archaeological site data recovery is anticipated at this time.

Transportation System

Approximately 47 miles of MNP and county road systems have been impacted by fire suppression traffic. The Kelso-Cima, Cedar Canyon, Black Canyon, Wild Horse Canyon, and Macedonia Canyon Roads will be impacted by increased vegetative debris, in addition to sediment and rock debris that occurs naturally in unburned conditions. Specifications within this plan recommend that debris be removed from low water crossings and culverts and roads be cleaned after rain events to reduce threats to public safety resulting from debris blockages or damages to the road system. Loss of vegetation and vehicle traffic during the fire may have exponentially increased the amount of dust greatly diminishing visibility. Motorists driving on these roads are at increased risk of vehicular accidents, including risk of human injury and/or fatalities.

Mine Safety

111 abandoned mine sites exist within the fire perimeter. 27 of these mines have one or more openings that could pose a risk to visitor safety through falling or entrapment. The mines of the district are generally of the historic period, mine openings are supported by wooden structures and show little or no evidence of modern excavation. Wooden support structures, buildings and ore bins are present and readily burnable in the presence of wildfire. Wooden features have been burned at mine sites resulting in unsafe and unstable openings, damage to historic features and bat habitat.

The BAER Abandoned Mine Lands (AML) specialist and other BAER team members observed active collapsing of shafts and adits resulting from burned away structural members like shaft collars or adit portal supports. In many cases the structural supports have burned away, but the

shaft or adit has not yet collapsed resulting in an **extremely unsafe condition**. Unconsolidated aggregate material previously supported by the collar or portal support is now hanging, in a vertical position, poised for collapse. An unsuspecting visitor or curious staff member who approaches a mine opening in this condition, particularly a shaft, could be caught in an “hourglass” collapse of the unconsolidated surface material. Photo #570, in Appendix III Photo Documentation, shows an unsupported collar in this condition.

Public Safety

The Hackberry Complex impacted public use facilities and structures including campgrounds, roads, trails, fences, informational signs, mines, traffic safety signs, and previous road closure rehabilitation efforts. A total of 67 tree hazards were identified within Mid Hills Campground and along the Seven Mile Trail. Nearly all identified tree hazards consisted of piñon pine (*Pinus monophylla*), a few junipers (*Juniperus utahensis*) were also designated. Tree hazards were delineated with pink flagging. A total of 33 traffic safety and direction signs and trail markers were damaged by fire on MNP lands. Consumption of vegetation along the Seven Mile Trail has rendered the path less identifiable to MNP visitors. This may result in hikers straying from the trail and increase their exposure to unsafe conditions such as mine shafts, down fences, and steep, unstable terrain. It may also contribute toward resource damage as hikers create multiple paths along the trail or wander into sensitive areas, such as springs or cultural resource sites. Additional signing may be required to mitigate this situation.

Increased dust levels may pose a safety hazard to MNP visitors over the short term until vegetation becomes reestablished. A total of 1.5 miles of fire-damaged fences were identified in public areas adjacent to high-use roads and trails. The downed wire, partially obscured by vegetation, will become a potential hazard to motorists and hikers in these areas. The majority of this concern occurs along the Wild Horse Canyon Road, with additional areas identified where the Seven Mile Trail intersects burned pasture fences. Repair of these hazards are required to ensure public safety within the fire area on the Preserve.

Emergency Stabilization

Based on aerial and ground surveys the BAER Team identified the following treatments for implementation. These treatments are in accordance with National ESR Policy, and the Interagency Burned Area Emergency Stabilization, September, 2003.

- Known Cultural Site Assessment
- Cultural Site Stabilization
- Increased Law Enforcement Patrol
- Burro Removal
- Tree hazard mitigation
- Post-flood event road clean-up
- Replace and Install public safety signs
- Monitor State Listed Plant Species
- Non-Native Invasive Species Control
- Exclusion Fences
- Stabilize Abandoned Road Closures
- Plan Preparation
- Implementation Leader
- Assess Abandoned Mine Hazards

The BAER Team conducted a closeout presentation to the MNP and other interested parties on July 5, 2005, providing issues, findings and recommendations. The team detailed proposed emergency stabilization treatments to agency administrators and staff.

Implementing emergency stabilization treatments to protect life and property, mitigate tree hazards, protect cultural resources, non-native invasive species control, mine safety inspections, and road closures should be initiated as quickly as possible through the Implementation Leader.

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HACKBERRY COMPLEX

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PART A FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	Hackberry	Jurisdiction	Acres
Fire Number	MNP6375	<u>NPS, Mojave Nat. Preserve</u> <u>Private</u> <u>State of California</u>	63,127 ac.
Agency Unit	National Park Service Mojave National Preserve		6,086 ac. 1,699 ac.
Region	Pacific West		
State	California		
County(s)	San Bernardino		
Ignition Date/Manner	June 22, 2005 Lightning		
Zone	Southern California		
Date Contained	June 28, 2005		
Date Controlled		TOTAL ACRES	70,912 ac.

PART B NATURE OF PLAN

Type of Plan (check one box below)

Initial Submission	X
Update and Revising Initial Submission	
Supplying Information For Accomplishment To Date On Work Underway	
Different Phase Of Project Plan	
Final Report (To Comply With The Closure Of The EFR Account	

EMERGENCY STABILIZATION OBJECTIVES

- Locate and stabilize severely burned conditions that pose a direct threat to human life, property, or critically important cultural and natural resources.
- Recommend post-fire emergency stabilization prescriptions that prevent irreversible loss of natural and cultural resources.
- Conduct immediate post-burn reconnaissance for fire suppression related impacts to threatened and endangered (T&E) species, and cultural sites.
- Develop monitoring specifications designed to document relative effectiveness of emergency stabilization treatments or whether additional emergency stabilization treatments are required.

BURNED AREA EMERGENCY STABILIZATION PLAN

PART C - TEAM ORGANIZATION

BAER TEAM MEMBERS

POSITION	TEAM MEMBER / AGENCY
Team Leader	Dave Smith, FWS
Deputy Team Leader	Richard Hadley, FWS
Operations	Maurice Williams, BIA
Operations (Mine Safety)	Chris Holbeck, NPS
Vegetation	Hal Luedtke, BIA
Soil and Watershed	Becca Smith, USFS, (Lead) Jessica Gould, USFS (Trainee)
Wildlife	Karen Hayden, USFS, (Lead) Ken Griggs, FWS (Trainee) Alicia Rabas, BLM
Cultural	Carla Burnside, FWS Dan Hall, BIA
Environmental Compliance	Darryl Martinez, BIA
GIS	Luther Arizana, BIA (Lead) Gerald Barnes, Passamaquoddy Tribe
IT / Documentation	Richard Inman, BIA

PRIMARY SUPPORT PERSONNEL

Mojave Nat. Preserve Resource Advisor/Liason	Sandee Dingman, NPS
Vegetation Ecologist	Jane Rodgers, NPS

Resource Advisors: (Note: Resource Advisors are individuals who assisted the BAER Team with the preparation of this plan. See the consultations Section of this plan for a full list of agencies and individuals who were consulted or otherwise contributed to the development of this plan.

NAME	AFFILIATION, SPECIALTY
Matthew Brooks,	USGS, Research Botanist, Henderson, NV
Brian Croft	FWS, Biologist, Ventura, CA
Curt Deuser	NPS, Supervisory Restoration Biologist, Boulder City, NV
David Nichols	NPS, Archaeologist, Mojave National Preserve
Debra Hughson	NPS, Science Advisor, Mojave National Preserve
Anne Kearns	NPS, Hydrologist, Mojave National Preserve
Andy Pauli	CA DFG, Wildlife Biologist, San Bernadino County, CA
Larry Whalon	NPS, Chief of Resources Management, Mojave National Preserve
Dannette Woo	NPS, Compliance Specialist, Mojave National Preserve

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CONSULTATIONS

Bureau of Land Management

Alicia Rabas, Wildlife Biologist 760-326-7060

National Park Service

Curt Deuser, Supervisory Restoration Biologist 702-293-8979
Sandee Dingman, Biologist 760-252-6146
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Chuck Heard, Fire Management Officer, MNP (760) 252-6132
Larry Whalon, Chief Resources Management, MNP (760) 252-6101
Lisa Wilson, Administrative Officer, MNP (760) 252-6101
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James Woolsey, Chief Interpretation, MNP (760) 252-6120

U.S. Fish and Wildlife Service

Brian Croft, Biologist 805-644-1766

U.S. Geological Survey

Matthew Brooks, Research Botanist 702-564-4615

California Fish & Game

Andy Pauli, Wildlife Biologist 760-240-1372

Office of Historic Preservation

Dwight Dutschke (Sacramento, CA. Office) 916-653-9134

Misc. Consultants

Jim André, Director SMGDRC, UCR (760) 733-4222
Rob Fulton, Site manager, DSC, CSUF (714) 278-2428
Rob Blair, Livestock Permittee, 7IL Ranch (760) 928-2564

PART D - SUMMARY OF APPROVAL AUTHORITIES

NATIONAL PARK SERVICE

ACTIVITIES REQUIRING NATIONAL OFFICE APPROVAL (Emergency Stabilization Requests (Charged to ES)).	Cost
#1, Known Cultural Site Assessment	\$40,332
#2, Cultural Site Stabilization	\$1,108
#3, Increase Law Enforcement Patrol	\$206,020
#4, Burro Removal	\$84,650
#5, Tree Hazard Mitigation	\$8,131
#6, Post-Flood Event Road Clean-up	\$6,229
#7, Replace and Install Public Safety Signs	\$26,890
#8, Monitor State Listed Plant Species	\$58,240
#9, Non-Native Invasive Species Control	\$30,167
#10, Exclusion Fences	\$31,587
#11, Abandoned Road Closures and Signs	78,989
#12, Plan Preparation	\$162,457
#13, Implementation Leader	\$107,795
#14, Assess Abandoned Mine Hazards	\$62,228
SUBTOTAL	\$904,823.00

PART E SUMMARY OF ACTIVITIES

The SUMMARY OF ACTIVITIES table identifies emergency stabilization costs charged or proposed for funding from fire suppression rehabilitation, emergency stabilization, or rehabilitation funding sources. The total cost of the treatments excluding the costs absorbed by the fire (fire crew, labor and associated overhead) is displayed as either Fire Suppression Rehabilitation (SR), Emergency Stabilization (ES), Rehabilitation (R), or Agency Operations/Other (OP/O).

PART E – NATIONAL PARK SERVICE

No.	TREATMENT SPECIFICATION	UNIT	UNIT COST	# OF UNITS	COST BY FUND SOURCE			IMPLEMENTATION METHOD	SPECIFICATION TOTAL
					SR	ES	R		
#1	Known Cultural Site Assessment	Arch Site	\$267	151		ES		C	\$40,332
#2	Cultural Site Stabilization	Site	\$1,108	1		ES		P	\$1,108
#3	Increase Law Enforcement Patrol	Month	\$17,168	12		ES		P	\$206,020
#4	Burro Removal	Burro	\$564	150		ES		C	\$84,650
#5	Tree Hazard Mitigation	Tree Hazard	\$121	67		ES		P,M,T	\$8,131
#6	Post-Flood Event Road Cleanup	Mile	\$130	48		ES		P	\$6,229
#7	Replace and Install Public Safety Signs	Sign	\$507	53		ES		C	\$26,890
#8	Monitor State Listed Plant Species	Species	\$5,824	10		ES		C,M	\$58,240
#9	Non-Native Invasive Species Control	Sites	\$1,886	16		ES		P	\$30,167
#10	Exclusion Fences	Mile	\$4,714	6.7		ES		C	\$31,587
#11	Stabilize Abandoned Road Closures	Closure	\$1,232.95	64		ES		P,M	\$78,989
#12	Plan Preparation	Plan	\$162,457	1		ES		P,M,T	\$0
#13	Implementation Leader	Leader	\$107,795	1		ES		P,C	\$107,795
#14	Assess Abandoned Mine Hazards	AML Site	\$2,304	27		ES		P	\$62,228
TOTAL									\$742,366.00

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PART F - SPECIFICATION

SPECIFICATION TITLE:	Known Cultural Site Assessment	JURISDICTIONS:	NPS-MNP
PART C: LINE ITEM:	#1, Known Cultural Site Assessment	FISCAL YEAR:	2005, 2006
ESR REFERENCE #:	6.3.1 Known Cultural Site Assessment	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
This treatment will entail the assessment of known National Register of Historic Places (National Register) eligible or potentially eligible prehistoric and historic archaeological sites for post-fire damage and potential risks from erosion, looting, or vandalism. This treatment may also provide for emergency BAER actions on those easily accessible sites that are deemed to be highly susceptible to looting.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
Known habitation sites, rock art sites, rock shelters, and historical sites within the burn area. Cultural resources locations are exempt from public disclosure under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA).
C. Provide and Number Detailed Design/Construction Specifications
1. Assess damage/loss at thirty-three (33) rock art sites. Provide recommendations for supplemental treatments for those sites that may be candidates for restoration or repair.
2. Assess post-fire risks at a known historical site that is located in an area that is highly susceptible to looting. Plan and implement emergency BAER actions.
3. Assess post-fire risks of twenty-one (21) additional historical sites and ninety-six (96) prehistoric sites.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
The purpose of this treatment is to protect significant archaeological sites from loss of integrity as the result of post-fire effects that include erosion, looting, or vandalism. It will also serve to assess any damages these resources may have sustained during the fire.
E. Describe Treatment Effectiveness Monitoring
Results of the assessment for resource risks from erosion may require the development of supplemental treatment specifications. Risks from looting and/or vandalism will be routinely monitored by the presence of increased law enforcement (see ESR Reference # 6.3.3) in coordination with the NPS-MNP archaeologist(s).

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
1 GS-9 Archeologist @ \$24/Hour X 720 Hours X 1 Fiscal Year =	\$17,280.
1 GS-7 Archeologist @ \$22.35/Hour X 720 Hours X 1 Fiscal Year =	\$16,092.
TOTAL PERSONNEL SERVICE COST	\$33,372.

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Misc. field supplies	\$1,000.
TOTAL MATERIAL AND SUPPLY COST	\$1,000.

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
GSA Vehicle @ \$0.16/Mile X 6000 Miles X 1 Fiscal Year =	\$960.
TOTAL TRAVEL COST	\$960.

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Rock Art Specialist(s) @ \$25/Hour X 200 Hours X 1 fiscal Year =	\$5,000.
TOTAL CONTRACT COST	\$5,000.

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	Rock Art Site	\$ 167.	6	\$ 1,000.	ES	C
2005	Non RA Site	\$ 44.	23	\$ 4,842.	ES	P
2005	Hist. Site	\$11,124.	1	\$11,124.	ES	P
2006	Rock Art Site	\$ 148.	27	\$ 4,000.	ES	C
2006	Non RA Site	\$ 189.	94	\$19,366.	ES	P
TOTAL	Arch Site	\$ 267.	151	\$40,332.	ES	C,P
FUNDING SOURCES		Non RA Site		METHOD OF COMPLETION		
F = Fire Suppression				P = Agency Personnel Services		
ESR = Emergency Stabilization & Rehab.				C = Contract		
OP/O = Agency Operating Fund				EFC = Emergency Fire Contract		
EWP = Emergency Watershed Program				FC = Crew Labor Assigned to Fire		
		Arch Site				

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	C
2. Documented cost figures from similar project work obtained from local agency sources.	M
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
Cultural Resources Assessment, Appendix I.

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS-MNP	151	\$40,332.
TOTAL COST	151	\$40,332.

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	Cultural Site Stabilization	JURISDICTIONS:	NPS-MNP
PART C: LINE ITEM:	#2, Cultural Site Stabilization	FISCAL YEAR:	2005, 2006
ESR REFERENCE #:	6.3.2 Cultural Site Stabilization	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
This treatment will provide for the diversion of charred wood and ash laden runoff away from four "sleeping circles". These sensitive archaeological features represent the floors (living surfaces) of brush constructed shelters.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
A large habitation site located within the Hackberry burn area. Such locations are exempt from public disclosure under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA).
C. Provide and Number Detailed Design/Construction Specifications
1. Place four straw wattles upslope from the features at risk in a semi-circular pattern that will serve to divert runoff away from the "sleeping circles".
D. Describe Purpose of Treatment Specification – What Resource will be Protected
The purpose of the treatment is to prevent the down slope movement of charred wood and ash that would otherwise fill and therefore compromise the integrity and any future research potential of four "sleeping circles".
E. Describe Treatment Effectiveness Monitoring
The treatment will be monitored after one year for effectiveness by a NPS-MNP archeologist and to determine if it should remain, and for how long; if it has accomplished its purpose and should be removed; or if the treatment should be modified.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
1 GS-9 Archeologist @ \$24/hr X 16 hours X 1 Fiscal Year =	\$384.00
2 GS-5 Maintenance Workers @ \$18/hr X 32 hours X 1 Fiscal Year =	\$576.00
TOTAL PERSONNEL SERVICE COST	\$960.00

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Straw wattles (25 ft) @ \$25.81/Each X 8 X 1 Fiscal Year =	\$207.00
Bundle of stakes (1x2x24) @ \$11.64/Each X 1 Fiscal Year =	\$ 12.00
TOTAL MATERIAL AND SUPPLY COST	\$219.00

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
GSA vehicle mileage @ \$0.16/Mile X 200 Miles X 1 Fiscal Year =	\$32.00
TOTAL TRAVEL COST	\$32.00

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	COST /ITEM

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	Site	\$612.	1	\$612.	ES	P
2006	Site	\$496.	1	\$496.	ES	P
TOTAL	Site	\$1,108.	1	\$1,108.	ES	P
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	M
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See cultural resources assessment, Appendix I

IV. TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS-MNP	1 archaeological site	\$1,108.
TOTAL COST	1 archaeological site	\$1,108.

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	Increase Law Enforcement Patrol	JURISDICTIONS:	NPS
PART C: LINE ITEM:	#3, Resource Protection	FISCAL YEAR:	2005 - 2006
ESR REFERENCE #:	6.3.1 Cultural Resources Protection	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
Looting and vandalism is known to occur within the East Mojave National Preserve. Reduced ground cover as the result of fire effects expose cultural resources locations to increased risk from such activities. Such risks can be minimized through law enforcement patrols at selected sites and enforcement of area closures. Law enforcement officers shall have authority to take action on artifact collectors, looters, and off road vehicle violators.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
Historic Properties within the Hackberry Complex burned areas. Such locations are exempt from public disclosure under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA) The NPS maintains its own records on the location of sensitive cultural resources, and will provide, as necessary such information to law enforcement officers, and the professional archaeologist having oversight for compliance with the implementing regulations under the NHPA.
C. Provide and Number Detailed Design/Construction Specifications
1. Coordinate law enforcement patrols with NPS management and NPS archaeologist
2. Undertake systematic and discretionary patrols, make contact as appropriate, and take action against violators.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
To enforce area closures and to protect exposed, sensitive cultural resources and deter looters. Special attention will be given to resources that are known to be subject to active looting. Patrols should continue until public interest decreases, and re-growth has served to obscure previously exposed artifacts and features.
E. Describe Treatment Effectiveness Monitoring
Park staff will monitor for effectiveness of law enforcement efforts to dissuade looting and vandalism.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Law enforcement officer GS-9 @ \$45,485/Year X 1 Year X 4 Officers	\$181,940
TOTAL PERSONNEL SERVICE COST	\$181,940

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
Law Enforcement GSA Vehicle Rental @ \$4,020 / year (includes mileage fee) X 4 Vehicles	\$16,080
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	\$16,080

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Misc. supplies and equipment @ \$2,000 / officer X 4	\$8,000
TOTAL MATERIAL AND SUPPLY COST	

Increase Law Enforcement

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL TRAVEL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	COST /ITEM

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	MONTH	\$17,168	3	\$51,505	ES	P
2006	MONTH	\$17,168	9	\$154,515	ES	P
TOTAL	MONTH	\$17,168	12	\$206,020	ES	P
FUNDING SOURCES F= Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Vegetation and Cultural Resource Assessment

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS	PATROL MONTHS	\$206,020
TOTAL COST		\$206,020

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	Burro Removal	JURISDICTIONS:	NPS-MNP
PART C: LINE ITEM:	#4, Burro Removal	FISCAL YEAR:	2005
ESR REFERENCE #:	6.3.4 Burro Removal	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
Feral burros within the vicinity of fire will be rounded up and removed from the park by helicopter.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
This treatment will occur within the Hackberry Fire Complex and in areas adjacent to the burn areas if indicators show that the burros are trailing in and out of the burn. Special attention will be given to areas around springs or developed wells, and other such locations where burros are known to congregate.
C. Provide and Number Detailed Design/Construction Specifications
1. Construct temporary corrals
2. Round-up burros
3. Employ helicopter to remove corralled burros.
4. Transport burros to adoption facility.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
The purpose of the treatment is to remove the presence of burros from the preserve. Burro activity, particularly around springs poses a risk to the integrity of archaeological sites from trampling, trailing and wallowing.
E. Describe Treatment Effectiveness Monitoring
Park rangers and resources field staff will monitor the treatment area for the reoccurrence of burros. Park rangers and resources field staff will monitor the treatment area for the reoccurrence of burros.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
TOTAL PERSONNEL SERVICE COST	

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
Purchase of horse panels (temporary corrals) @ \$250./Panel X 20 Panels =	\$5,000.
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	\$5,000.

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Feed burros in temporary holding facility @ \$2.50/Day X 10 Days X 150 Burros =	\$3,750.
Misc. supplies	\$1,000.
TOTAL MATERIAL AND SUPPLY COST	\$4,750.

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
Transport of burros @ \$3./loaded mile X 6 Livestock Trucks X 300 Miles =	\$5,400.
TOTAL TRAVEL COST	\$5,400.

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Burro Round-up @ \$6,525./Day X 10 Days =	\$65,250.
Veterinary Services @ \$200./Day for 10 Days =	\$ 2,000.
Lab (blood) Work @ \$15./Head X 150 Head =	\$ 2,250.
TOTAL CONTRACT COST	\$69,500.

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004						
2005	Burro	\$564.	150	\$84,650.	ES	C
2006						
TOTAL	Burro	\$564.	150	\$84,650	ES	C
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	C
2. Documented cost figures from similar project work obtained from local agency sources.	M
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services	M = Materials/Supplies
T = Travel	C = Contract
F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Cultural Resources Assessment, Appendix I

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS-MNP	150	\$84,650.
TOTAL COST	150	\$84,650.

BURNED AREA EMERGENCY STABILIZATION & REHABILITATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	TREE HAZARD MITIGATION	JURISDICTIONS:	NPS
PART E: LINE ITEM:	#5, Tree Hazard Mitigation	FISCAL YEAR:	2005
ESR REFERENCE #:	8.3.5 Health & Safety	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
Mitigate tree hazards in high public use areas.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
Fire-damaged trees within striking distance of roads and campsites in the Mid Hills Campground, and along the Seven Mile Trail.
C. Provide and Number Detailed Design/Construction Specifications
<ol style="list-style-type: none"> 1. Tree Hazards with NPS rating of 5 or more have been designated by pink ribbon. 2. Fall designated tree hazards away from roads and other improvements. 3. Flush cut stumps as low as possible. 4. Buck stems greater than 3 inches in diameter into 18 to 24 inch segments. In the campground stack segments next to fire rings, along the trail scatter segments at least 100 feet from the trail. 5. In the campground leave tops and limbs unlopped, chip on site and scatter chips in parking areas (off roadbed). Along the trail lop tops and limbs into 4 foot segments and scatter at least 100 feet from the trail.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
To provide for public safety.
E. Describe Treatment Effectiveness Monitoring
Additional trees will die and pose hazards in the future. Reevaluate tree hazards annually and designate additional trees for mitigation in accordance with the NPS Tree Hazard Rating System. Submit supplemental funding requests for subsequent mitigation treatments.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item) Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-5 Fallers/Swampers \$22.80/hour X 4 Laborers X 8 Hours/Day X 7 Days	\$5,107
GS-7 Supervisor \$28.27/hour X 1 Supervisor X 8 Hours/Day X 7 Days	\$1,583
TOTAL PERSONNEL SERVICE COST	\$6,690
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
Trailer Mounted Chipper \$350/Day X 3 Days	\$1,050
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	\$1,050
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Saw Gas, Oil, Chain, Etc.	\$200
TOTAL MATERIAL AND SUPPLY COST	\$200

Tree Hazard Surveillance/Mitigation

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
GSA Vehicle \$13/Day X 7 Days + 400 Mile @ \$0.25/Mi	\$191
TOTAL TRAVEL COST	\$191
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	Tree Hazard	121	67	\$8,131	ES	P
GRAND TOTAL	Tree Hazard	121	67	\$8,131	ES	P

* Surveillance completed by DOI BAER

Foresters

FUNDING SOURCES

F = Fire Suppression
 ESR = Emergency Stabilization & Rehab.
 OP/O = Agency Operating Fund
 EWP = Emergency Watershed Program

SPECIFICATION TYPE

ES = Emergency Stabilization
 R = Rehabilitation
 FS = Fire Suppression

METHOD OF COMPLETION

P = Agency Personnel Services
 C = Contract
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	M
3. Estimate supported by cost guides from independent sources or other federal agencies.	T
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan

See Public Safety Assessment for Tree Hazard Information. See Treatments Map for Tree Hazard Locations.

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS	67	\$8,131
TOTAL COST	67	\$8,131

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	ROAD MAINTENANCE	JURISDICTIONS:	NPS - MNP
PART C: LINE ITEM:	#6, Post-flood Event, Road Clean-up	FISCAL YEAR:	2005
ESR REFERENCE #:	6.3.9.2 Watershed & Property Protection	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
During major storm events, low-water crossings and other sections of roadways can be expected to flood. Flood events may erode road crossings or deposit sediment and debris on the roadway, making the road impassible and unsafe for vehicle travel. This specification provides for the clearing of sediment and debris from roadways following major runoff events.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
Low water fords, culverts, and roadways on portions of the Cedar Canyon, Black Canyon, Wild Horse Canyon, and Macedonia Springs Roads. See treatment map in Appendix III.
C. Provide and Number Detailed Design/Construction Specifications
1. Use heavy equipment to clear debris and sediment from roadways after major runoff events.
2. Deposit any removed debris out of the floodplain on high ground to prevent its transport back into channels and onto the roadway.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
Provide for safe public access on roadways following major runoff events.
E. Describe Treatment Effectiveness Monitoring
Inspect roadways after runoff events to determine if further treatment is needed. If road cleanup is needed, inspect road crossings to ensure complete removal of sediment or debris from roadway and placement of debris material outside of flow path.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
WG-09 @ \$30.51/hr x 24 hours x 1 flood event x 2 people =	\$1,465
WG-07 @ \$26.75/hr x 24 hours x 1 flood event x 2 people =	\$ 1,284
TOTAL PERSONNEL SERVICE COST	\$ 2,749

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
NPS backhoe @ \$35/hr (fuel/maintenance) x 24 hours x 1 flood event =	\$ 840
NPS skid-steer @ \$25/hr (fuel/maintenance) x 24 hours x 1 flood event =	\$ 600
County Road Dept. Grader @ \$85/hr x 24 hours x 1 flood event =	\$ 2,040
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	\$ 3,480

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL MATERIAL AND SUPPLY COST	

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL TRAVEL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	COST /ITEM

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	Mile	\$ 130	48	\$ 6,229	ESR	P
TOTAL						
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P, M, T, C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Soil and Watershed Assessment, Appendix I and Treatment Map in Appendix III.

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS	48 miles	\$ 6,229
TOTAL COST	48 miles	\$ 6,229

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	REPLACE AND INSTALL PUBLIC SAFETY SIGNS	JURISDICTIONS:	NPS
PART E: LINE ITEM:	#7, Replace and Install Public Safety Signs	FISCAL YEAR:	2005
ESR REFERENCE #:	8.3.5 Health and Safety	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
Replace traffic safety and directional signs along the Cedar Canyon, Black Canyon, and Wildhorse Canyon Roads. Replace and install additional trail signs along the Seven Mile Hiking Trail.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
See Hackberry Treatments Map.
C. Provide and Number Detailed Design/Construction Specifications
1. Purchase signs.
2. Install signs through contract labor.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
Standard traffic, trail, and directional signs are essential to provide for public safety on roadways and high-use backcountry trails and to prevent additional resource damage by keeping vehicles and visitors on roads and trails.
E. Describe Treatment Effectiveness Monitoring
Inspect contract installation of signs prior to acceptance and payment.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
TOTAL PERSONNEL SERVICE COST	
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Replacement Trail Markers 17 @ \$ 20 /sign	\$ 340
New Trail Markers 15 @ \$20/sign	\$ 300
Replacement Traffic Warning Signs 10 @ \$105/sign	\$ 1,050
New Dust Warning Signs 5 @ \$105/sign	\$ 525
Replacement Stop Sign 1 @ \$115/sign	\$ 115
Mileage/Directional Signs 4 @ \$1,200	\$ 4,800
Campground Safety Information Board 1 @ \$12,200	\$12,200
TOTAL MATERIAL AND SUPPLY COST	\$19,330
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL TRAVEL COST	

Replace & Install Safety Signs

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Carsonite Signs-	
Laborer with Equipment and Vehicle @ \$40/hour X 2 Laborers X 10 Hours/10 Signs X 32 Signs	\$2,560
Warning Signs-	
Laborer with Equipment and Vehicle @ \$40/Hour X 2 Laborers X 10 Hours/4 Signs X 20 Signs	\$4,000
Campground Safety Information Board-	
\$1,000 (based on cost estimate)	\$1,000
TOTAL CONTRACT COST	\$7,560

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	SIGN	\$507	53	\$26,890	ES	C
TOTAL	SIGN	\$507	53	\$26,890	ES	C
FUNDING SOURCES		SPECIFICATION TYPE		METHOD OF COMPLETION		
F = Fire Suppression		ES = Emergency Stabilization		P = Agency Personnel Services		
ES/R = Emergency Stabilization/ Rehab.		R = Rehabilitation		C = Contract		
OP/O = Agency Operating Fund		FS = Fire Suppression		EFC = Emergency Fire Contract		
EWP = Emergency Watershed Program				FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies.	M
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services	M = Materials/Supplies
T = Travel	C = Contract
F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within BAER Plan
See Public Safety and Soil and Watershed Assessments in Appendix I and Treatments Map in Appendix III for additional information.

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS-Hackberry	53 Signs	\$26,890
TOTAL COST	53 Signs	\$26,890

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	MONITOR STATE LISTED PLANT SPECIES	JURISDICTIONS:	NPS-MNP
PART C: LINE ITEM:	#8, MONITOR STATE LISTED PLANT SPECIES	FISCAL YEAR:	2006
ESR REFERENCE #:	8.3.6 Monitoring	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment	
Stabilize high priority state listed rare plant populations within the fire perimeter of the Hackberry Complex as defined by field assessments and monitoring.	
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment	
Locations of populations are throughout the burned area; see Rare Plant Map (Appendix I). Focused locations include Round Valley, Rock Spring, Government Holes, Pinto Mountain, Bathtub Spring, Cliff Canyon, and Pinto Valley.	
C. Provide and Number Detailed Design/Construction Specifications	
<ol style="list-style-type: none"> 1. Assess the following state listed plant populations for one year to determine impacts to population viability: <ol style="list-style-type: none"> a. <i>Astragalus cimae</i> var. <i>cimae</i> (Cima milkvetch) b. <i>Ayenia compacta</i> (ayenia) c. <i>Camissonia boothii</i> ssp. <i>boothii</i> (Booth's evening-primrose) d. <i>Cryptantha clokeyi</i> (Clokey's cryptantha) e. <i>Enneapogon desvauxii</i> (nine-awned pappus grass) f. <i>Eriogonum thornei</i> (Thorne's buckwheat) g. <i>Lotus argyraeus</i> var. <i>multicaulis</i> (scrub lotus) h. <i>Penstemon calcareus</i> (limestone beardtongue) i. <i>Penstemon thompsoniae</i> (Thompson's beardtongue) j. <i>Penstemon stephensii</i> (Stephen's beardtongue) k. <i>Robinia neomexicana</i> (New Mexico locust) 2. Assessment will include: <ol style="list-style-type: none"> a. Visit known occurrences for one year following the fire b. Describe threats to site as a result of the fire c. Map, photo-document, and census (using CNDDDB protocol) each occurrence; collect voucher specimens as needed d. At the end of the field season, prescribe management responses and submit supplemental funding requests 3. Management Response <ol style="list-style-type: none"> a. Occurrences within the fire showing a decrease in distribution and/or number of individuals greater than 30% of their entire population require a management action. b. Management actions will consist of the following options, depending upon the recommendations from site monitoring: <ol style="list-style-type: none"> i. Conservation of propagule material; storage may be at either the Rancho Santa Anna Botanical Garden (RSABG) or through the Center for Plant Conservation ii. Propagation and reintroduction of individual plants to appropriate habitat iii. Mitigation of threats to the population (may include removal of non-native species, protection from predation, and/or protection from human disturbance including off-road vehicles) iv. Seek supplemental funds through the Burned Area Emergency Rehabilitation Program (BAER) 	
D. Describe Purpose of Treatment Specification – What Resource will be Protected	
Mojave National Preserve is a refuge for 103 species of rare plants as described by the State of California in conjunction with the California Native Plant Society (CNPS). Approximately 38 may have been burned over by the Hackberry Complex; there is limited information regarding the potential effects of the fire to these species. This specification has prioritized 10 of these species for focused monitoring with the potential for future treatments based on assessment information.	
E. Describe Treatment Effectiveness Monitoring	
Effective treatment includes 1) complete assessment of fire impacts to known populations and assess nearby potential habitat, 2) submission of assessment information (photo-documentation, CNDDDB submittals, GPS/GIS information, fire effects descriptions, and management prescriptions) to NPS staff, 3) submittal of supplementary management treatments as needed, and 4) initiate emergency stabilization treatment(s) as required to maintain population viability.	

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
TOTAL PERSONNEL SERVICE COST	

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
CESU Project Management: \$80/hr x 128 hrs/yr	\$10,240
Field Assistant (1): \$65/hr x 640 hrs/yr	\$41,600
Data analysis and report writing: Project Manager \$80/hr x 80 hrs	\$6,400
TOTAL CONTRACT COST	\$58,240

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2006	Species	\$5,824	10	\$58,240	ESR	C
TOTAL	Species	\$5,824	10	\$58,240	ESR	C
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C, M
3. Estimate supported by cost guides from independent sources or other federal agencies.	C
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services	M = Materials/Supplies
T = Travel	C = Contract
F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
See Rare Plant Map (Appendix I) and Vegetation Assessment.

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS	10	\$58,240
TOTAL COST	10	\$58,240

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	NON-NATIVE INVASIVE SPECIES CONTROL	JURISDICTIONS:	NPS-MNP
PART C: LINE ITEM:	#9, NON-NATIVE INVASIVE SPECIES CONTROL	FISCAL YEAR:	2005, 2006
ESR REFERENCE #:	8.2.3.1 Non-native Invasive Plant Detection and Monitoring	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment

Detect, control, and monitor non-native invasive species in burned areas and prevent the expansion of known populations into newly disturbed sites.

B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment

The following sites with known locations of non-native species will be surveyed. See Vegetation Treatments Map.

Sites to survey for salt cedar:

- Mexican Water Spring
- Toughnut Spring
- Macedonia Spring
- Bullock Spring
- Chicken Water Spring
- Gold Valley Spring
- Gold Valley Wash
- Rock Spring
- Government Holes
- Hackberry Spring
- Black Canyon Road at Narrows

Vector corridors and sites to survey for early detection of other non-native species:

- Cedar Canyon Road
- Black Canyon Road
- Wildhorse Canyon Road
- Watson Wash (Hackberry Road)
- Macedonia Canyon Road
- Hole in the Wall Fire Center, Visitor Center, and Campground

C. Provide and Number Detailed Design/Construction Specifications

1. Delineate treatment areas for 11 springs and washes, 44 miles of road corridors, and at one developed site.

2. Salt cedar control:

Starting September 2005, monitor spring sites and treat salt cedar using hand removal; between November 2005 and April 2006 treat plants that cannot be hand pulled with low volume basal spray application of Garlon 4® and JLB oil at springs and the Meadow Valley Wash. Salt cedar, when cut, must be removed a safe distance away from water sites to avoid resprouting.

3. Other Species control:

Survey vector corridors and sites for early detection of invasive species including *Brassica tournefortii*, *Salsola spp.*, *Lepidium latifolium*, *Sysimbrium irio*, *Descurainia sophia*, and state listed noxious weeds. Survey, map and control tall whitetop, Russian knapweed, and hoary cress, at springs, wetlands, washes, and cattle tanks within the burned areas. Treat with 1% habitat aquatic herbicide with surfactant to control these species.

Surveying includes:

- Inspecting road and trail corridors via vehicle, by foot, or horseback
- Inspecting around facilities
- Recording location and routes of surveys; GPS and data files provided to park GIS staff
- Collecting data regarding species found, abundance, and photo-documentation

When feasible, non-native species shall be controlled. Control includes:

- Removal of species using approved IPM methods as suggested above
- Plants in seed must be bagged and removed off site

D. Describe Purpose of Treatment Specification – What Resource will be Protected
Control spread of non-native invasive species into susceptible burned areas that will change the native plant composition. Protect the ecological integrity and site productivity of 35 state and locally listed plant species and one federally threatened animal and their associated habitats on lands administered by the MNP. Prevent spread of noxious weeds into critical habitats on unburned lands within and adjacent to the Preserve.
E. Describe Treatment Effectiveness Monitoring
Spot checking of invasive non-native plant sites to ensure control methods are meeting management objectives. Survey crews will visit treated sites within one week of treatment; this is especially important for weed populations that are sprayed to ensure effectiveness of herbicide application. Surveyed and treated sites should reduce salt cedar to less than 1% cover at springs and other moist areas. Results are incorporated by park staff into long-term integrated pest management programs. Data is provided to NPS Exotic Plant Management Team (EPMT) for future project planning. Initiate follow-up treatments if additional non-native species or large populations are discovered.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Project Manager: (1) GS-11 PFT @ \$2752/PP x 2 PP = \$5504	\$5504
Field Technicians: (2) GS-5 Seasonal @ \$1240/PP x 8 PP = \$19840	\$19,840
TOTAL PERSONNEL SERVICE COST	\$25,344

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
GSA Vehicle (4WD pickup) @ \$600/month x 6 months = \$3600	\$3600
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	\$3600

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
GPS unit (Garmin or similar)	\$300
Digital camera	\$300
Herbicide: to be selected by management unit with approval from NPS IPM Specialist	\$500
Hand tools: Hand picks @ \$13.50 X 2 = \$27 Lopping shears \$70 x 1 = \$70 Shovels @\$15 x 2 = \$30	\$127
TOTAL MATERIAL AND SUPPLY COST	\$1227

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL TRAVEL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	COST /ITEM

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	Sites	\$172	16	\$2,750	ESR	P
2006	Sites	\$1,714	16	\$27,421	ESR	P
TOTAL	Sites	\$1,886	16	\$30,171	ESR	P
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	M
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
Information derived from similar work conducted in the Mojave Desert by the National Park Service. Locations based on recommendations from MNP and NPS Exotic Plant Management Team staff (LMNRA Staff). See Vegetation Assessment and Non-native Plant Map.

IV. TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS-MNP	16	\$30,167
TOTAL COST		\$30,167

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	Exclusion Fences	JURISDICTIONS:	NPS
PART E: LINE ITEM:	#10, Exclusion Fences	FISCAL YEAR:	2005
ESR REFERENCE #:	8.3.2.2 Livestock, Wild Horse, and Burro Management	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
Repair existing fence and construct additional fence to exclude livestock and burros from burn area. Livestock and burro exclusion is necessary to allow the reestablishment of native vegetation. Existing fence damaged by the fire will be repaired, and temporary fence will be constructed in strategic locations to protect resources. Remove burned-over wood post fence that is now down and poses a safety risk to Park visitors and emergency stabilization workers. Fence removal is limited to high visitor use areas (roadsides and trails).
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
Existing pasture fence on the south end of Gold Valley and in Sand Wash will be repaired. Temporary fence will be constructed in Wild Horse Canyon, Saddle Horse Canyon, Borrego Canyon, and Beecher Canyon.
C. Provide and Number Detailed Design/Construction Specifications
1. NPS will designate specific fence locations, quantities, and order materials.
2. Contractor will install fence in accordance with standard NPS fence specifications. Contractor will install fence in locations that have been cleared by a wildlife biologist to ensure that Desert Tortoise burrows are avoid.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
The purpose of this treatment is prevent livestock and wild burros from entering the burned area and causing damage recovering vegetation and soils. The treatment will also remove downed interior wood post fence that was destroyed by the fire and now is a serious safety hazard to the visiting public.
E. Describe Treatment Effectiveness Monitoring
See Vegetation Recovery Monitoring Specification

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Administrative Costs and Construction Management	
Construction 0.8 miles @ \$2,365/mile	\$1,892
Reconstruction 4.4 miles @ \$473/mile	\$2,081
Removal 1.5 miles @ \$1,183/mile	\$1,775
TOTAL PERSONNEL SERVICE COST	\$5,748
EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	
MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Construction 0.8 miles @ \$3,375/mile	\$2,700
Reconstruction 4.4 miles @ \$675/mile	\$2,970
TOTAL MATERIAL AND SUPPLY COST	\$5,670
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM

TOTAL TRAVEL COST	
CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Construction 0.8 miles @ \$8,300/mile	\$6,640
Reconstruction 4.4 miles @ \$1,660/mile	\$7,304
Removal 1.5 miles @ \$4,150/mile	\$6,225
TOTAL CONTRACT COST	\$20,169

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	mile	\$4,714	6.7	\$31,587	ES	C
TOTAL	mile	\$4,714	6.7	\$31,587	ES	C
FUNDING SOURCES		SPECIFICATION TYPE		METHOD OF COMPLETION		
F = Fire Suppression		ES = Emergency Stabilization		P = Agency Personnel Services		
ES/R = Emergency Stabilization/ Rehab.		R = Rehabilitation		C = Contract		
OP/O = Agency Operating Fund		FS = Fire Suppression		EFC = Emergency Fire Contract		
EWP = Emergency Watershed Program				FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below				
1. Estimate obtained from 2-3 independent contractual sources.				
2. Documented cost figures from similar project work obtained from local agency sources.				P,M,C
3. Estimate supported by cost guides from independent sources or other federal agencies.				
4. Estimates based upon government wage rates and material cost.				
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)				
P = Personnel Services	M = Materials/Supplies	T = Travel	C = Contract	F = Suppression

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within BAER Plan
Construction costs derived from 12/9/02 NPS Pacific West Region Updated Estimates for Construction and Operation Costs, adjusted for inflation. Reconstruction costs assumed at 20 percent of construction costs. Removal costs assumed at 50 percent of construction management and labor costs only.

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS	6.7 miles	\$31,587
TOTAL COST	6.7 miles	\$31,587

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	Abandoned Road Closures and Signs	JURISDICTIONS:	NPS-MNP
PART C: LINE ITEM:	#11, Abandoned Road Closures and Signs	FISCAL YEAR:	2006
ESR REFERENCE #:	8.3.7 Public Use Management	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment	
Closure of abandoned roads to protect natural and cultural resources and wilderness.	
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment	
Closure treatments will occur at 64 locations throughout the burned area. Resource protection signs will be placed along Cedar Canyon Road, Wildhorse Canyon Road, Black Canyon Road, Watson Wash (Hackberry Road), and other roadways that lead into wilderness. Informational signs will be placed at major road junctions. Protective boulders will be placed throughout Mid Hills Campground at select campsites to prevent expansion of disturbed areas.	
C. Provide and Number Detailed Design/Construction Specifications	
<ol style="list-style-type: none"> 1. Informational signs: 7 signs will be placed at the following road junctions: <ol style="list-style-type: none"> a. Wildhorse Canyon – Black Canyon Junction South b. Wildhorse Canyon – Black Canyon Junction North c. Cedar Canyon – Kelso-Cima Road Junction d. Essex Road – Highway 40 Junction e. Cedar Canyon – Lanfair Road Junction f. Cedar Canyon – Black Canyon Junction g. Cedar Canyon (sharp right turn heading east from Lanfair) 2. Roadside resource protection signs: Carsonite signs will be placed every half mile along sections of the following roads (See Abandoned Road Closure Map in Appendix 1) (total mileage 34 miles): <ol style="list-style-type: none"> a. Wildhorse Canyon Road b. Black Canyon Road c. Cedar Canyon Road d. Watson Wash/Hackberry Road e. Macedonia Road <p>Signs may be installed by law enforcement officers as part of their assignment related to this incident.</p>	
<ol style="list-style-type: none"> 3. Road closure treatments will occur at 64 locations throughout the burn. Closure treatments will consist of the following: <ol style="list-style-type: none"> a. Administrative gates (7)—pipe gates with NPS locks to be used by park staff, local residents, and persons in possession of an active mine claim that require access. If necessary, gates will be placed with metal posts and smooth wire wings to prevent circumvention by off-road vehicles. b. Boulder barricades <ol style="list-style-type: none"> i. Road closures (23)—large boulders placed within 100-meters of the junction of a closed road and an open road. Boulders will be of sufficient size and number to prevent illegal vehicular access (approximately 8 rocks of a minimum of 30-inch diameter per site). Boulders will be of an acceptable color and type to blend in with the surrounding landscape. This treatment includes the placement of carsonite resource protection signs at each closure. ii. Mid Hills Campground Campsite boundary defining—13 campsites require boulders placed around the perimeter of each site to prevent expansion of sites into areas recovering from the fire c. Rehabilitation (34)—abandoned road junctions will be rehabilitated using vertical mulch, adjacent small rock material, raking in of tracks and ash, removal of berms, and the placement of carsonite signs and/or metal posts to prevent illegal access. This treatment will use natural materials to camouflage roads, create microsites for seed catchment, and improve water retention along the visible portion of abandoned roads (on average the initial 50-meters of each road). 4. Public education brochures consisting of a site bulletin informing visitors of the Hackberry Complex, resource sensitivity in the area, increased importance of staying on established roads and trails, protect public safety, and information on resources of interest within the burned area. 	
D. Describe Purpose of Treatment Specification – What Resource will be Protected	
The Hackberry Complex is comprised of over 51,100 acres of wilderness, areas of high cultural and natural resource value, and the remains of many abandoned roads. Prior to the fire, many of these abandoned roads had been posted and/or barricaded, and had begun the process of revegetation; however, the fire consumed much of the vegetation previously obscuring these	

closed roadways, creating an opportunity for vehicles to travel off of established roadways.

This treatment proposes to prevent illegal vehicular use of these roadways through increased public awareness of resources at risk, barricades, and rehabilitation techniques. The goal is to protect valuable cultural and natural resources that may be accessed via these abandoned roadways, allow for natural revegetation of these sites, and discourage visitation to abandoned mine sites. Park visitation exceeds 500,000 annually.

E. Describe Treatment Effectiveness Monitoring

Treated road closures will be evaluated for efficacy of deterring illegal off-road vehicle travel. Roadways will slowly become revegetated over time, and monitoring should examine the regeneration of native perennial shrubs within the old roadbed. Visitors will have an improved understanding of the rules regarding traveling on open roadways, and will be provided with information describing the fire and the increased need for resource protection.

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Field Coordinator: GS-7/5 PSF @ \$26.25/hr x 640 hrs	\$16,800
Law enforcement officer GS-9 (4) (see Specification "Increase Law Enforcement Patrol")	\$0
Interpretive Ranger: GS-9/5 PFT @ \$32.11 x 80 hours	\$2,569
TOTAL PERSONNEL SERVICE COST	\$19,369

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
Leased vehicle: 4wd Extended Cab (2) @ \$35/day x 40 days	\$1,400
Articulated Front End Loader: 1 @ \$750/day x 10 days	\$7,500
Dump truck: 1 @ \$150/day x 10 days	\$1,500
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	\$10,400

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Resource Protection Signs (72): 34 miles of signage @ 1 carsonite sign/0.5 miles x \$20/sign	\$1,360
Road Closure Signs (128): 2 carsonites per road closure x 64 closures x \$20/sign	\$2,560
Carsonite Labels (all treatments): \$2/label x 200 signs	\$400
Post driver: 2 x \$135	\$270
Informational Signs: 7 x \$105/sign	\$735
Pipe gates: 7 gates x \$250/gate	\$1,750
Locks and keys: 7 x \$35	\$245
Boulders: (\$64 ea x 180) + (\$150/load delivery x 3 loads)	\$11,970
Fuel: 40 gallons/day x \$2.75/gallon	\$110
Metal Posts: 500 @ \$4.29 ea	\$2,145
Rakes: 5 @ \$25 ea	\$125
Shovels: 5 @ \$35 ea	\$175
McCloud/Hoe-Rake: 5 @ \$45 ea	\$225
Pick Mattock: 5 @ \$25	\$125
GPS Unit	\$500
Batteries	\$60
Brochure production/printing: 10,000 x \$0.10 ea	\$1000
TOTAL MATERIAL AND SUPPLY COST	\$23,755

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL TRAVEL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Work Crew (SCA 10-person Conservation Crew or similar)	\$23,385
Equipment Operator \$25/hour x 80 hours	\$2,000
TOTAL CONTRACT COST	\$25,385

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2006	Closure	\$1,232.95	64	\$78,909	ESR	C, P
TOTAL	Closure	\$1,232.95	64	\$78,909	ESR	C, P
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	M
4. Estimates based upon government wage rates and material cost.	P
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
MNP GMP Vegetation Assessment Boulder costs from Boulder Placement Landscape Supply, Las Vegas NV for 2'x2'x2' rocks. Restoration Techniques from http://www.wildlandscpr.org/databases/biblionotes/Desert_Road_Removal.html

IV. TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS-MNP	64	\$78,989
TOTAL COST	64	\$78,989

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	Plan Preparation	JURISDICTIONS:	NPS
PART C: LINE ITEM:	#12, Plan Preparation	FISCAL YEAR:	2005, 2006
ESR REFERENCE #:	5.4.2 ESR PLAN	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
Prepare the Emergency Stabilization (ES) plan for the Hackberry Complex Fires on the Mojave National Preserve.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
Plan has been prepared to address all land ownerships within the Hackberry Complex including NPS managed and private lands. Plan costs include administrative costs, salaries of planning team, helicopter expenses, per diem, travel, vehicle rental, supplies, and work space rentals.
C. Provide and Number Detailed Design/Construction Specifications
<ol style="list-style-type: none"> 1. Conduct a detailed assessment of burn severity, its impacts to lands and the threats to life and property; protect critical cultural and natural resources 2. Write specifications based on assessment recommendations. 3. Submit plan for approval and secure funding from appropriate sources. 4. Per policy, complete annual reports with monitoring narratives and cost details.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
To prepare a comprehensive ESR plan to manage or mitigate the fire impacts in order to protect life, property and critical cultural and natural resources
E. Describe Treatment Effectiveness Monitoring
Per policy, an annual and final accomplishment report will be prepared with detailed costs and monitoring narratives and will be completed within 7 days of fire containment (DM 620, Chapter 3).

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Administration	\$32,085
Vegetation	\$16,993
Archaeology	\$24,460
Wildlife	\$15,940
Hydrology	\$17,156
Environmental Compliance	\$8,170
Documentation	\$8,370
Geographic Information Services	\$24,143
Mine Safety	\$15,140
*All costs above reflect salaries, per diem, travel, supplies, and administrative costs	
TOTAL PERSONNEL SERVICE COST	\$162,457

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL MATERIAL AND SUPPLY COST	

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
TOTAL TRAVEL COST	

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	COST /ITEM

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005	Plan	\$162,457	1	\$162,457	ES	P
2006						
2007						
TOTAL	Plan	\$162,457	1	\$162,457	ES	P
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

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2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P,M,T
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan

TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS	1	\$162,457
TOTAL COST		\$162,457

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	IMPLEMENTATION LEADER	JURISDICTIONS:	NPS
PART C: LINE ITEM:	#13, Implementation Leader	FISCAL YEAR:	2005, 2006
ESR REFERENCE #:	8.5 Project Management	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
Provided funding to support a full-time implementation leader to ensure prompt implementation of ES treatments. Salary and indirect costs are included to secure an individual who will provide management direction of emergency stabilization and future rehabilitation treatment specifications.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
The treatment specifications prescribed within the Hackberry Complex Emergency Stabilization Plan will be implemented on NPS administered lands within the Mojave National Preserve. The Implementation Leader will coordinate all ES treatments with staff, contractors, private landowners, and others to ensure stabilization actions are achieved in a timely manner.
C. Provide and Number Detailed Design/Construction Specifications
1. The Implementation Leader will coordinate all aspects of emergency stabilization and future rehabilitation actions approved in the Hackberry Complex Fire Burned Area Emergency Response Plan including the contracting of treatment specifications and activities, administering contracts, document treatments installed, maintaining financial tracking of costs, reporting rehabilitation progress, submitting supplemental requests for funding, ensuring the completion of all approved treatments, and coordinating with private landowners, universities, research groups and other affected agencies.
2. The Implementation Leader will contract and coordinate on-the-ground implementation of treatments including site orientation of contractors, developing daily/weekly work plans and supervising implementation activities.
3. The Implementation Leader will monitor the work to ensure compliance with all relevant Federal laws and regulations. Such laws and regulations include but are not limited to NEPA, NHPA, and all OSHA regulations and safety standards.
4. The Implementation Leader will provide semi-annual accomplishment reports due October 1 and April 1 detailing percent accomplishment for each project specification, dates of completion, funds expended, quality control inspection reports, and treatment effectiveness monitoring reports.
5. At the completion of the one year funding cycle for ES treatments, and the three year funding cycle for Rehabilitation treatments, the Implementation Leader will prepare a final accomplishment report. The final report will summarize all data requested in the semi-annual reports and provide a comprehensive and objective compendium of lessons learned of the treatment effectiveness of the prescribed treatments based on the prescribed monitoring plans found within the BAER ES and R plans. The report will be prepared in a hard copy and electronic format that will be distributed within the United States Government and will be made available to the public on Government administered websites. None of the reports will be considered proprietary to any contracted Implementation Leader, individual, company or their associated firms.
6. All approved Emergency Stabilization treatments must be completed within one year of the date of control of the fire. All approved rehabilitation treatments must be completed within three years of the control date of the fire.
7. Funding for implementation treatment specifications will one be provided on a cost reimbursement basis except for mutually agreed upon start up costs as pre-approved by a warranted contracting officer and for a case by case basis of supplies and materials as pre-approved by a warranted contracting officer.
8. The implementation leader will comply with all federal labor laws. Overtime must be approved in advance. Overtime will not exceed the hours in a fourteen day pay period. Payroll records must be submitted quarterly for documentation purposes.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
The intent of this specification is to provide fiscal support for proper administration of the short and long-term emergency stabilization and rehabilitation treatments prescribed within the Hackberry Complex Emergency Stabilization Plan.
E. Describe Treatment Effectiveness Monitoring
The Implementation Leader will conduct review of projects, financial accountability, and oversight and provide written and electronic monitoring reports as prescribe within DOI policy and the BAER plan.

Implementation Leader

II. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
1 year @ \$62,371 (Riverside, CA Locality Pay Rate)	\$63,371
TOTAL PERSONNEL SERVICE COST	\$63,371

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
Vehicle Rental @ \$700/mo x 12 Months	\$8,400
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	\$8,400

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Office Materials and supplies @ \$2,000/year x 1 year	\$2,000
TOTAL MATERIAL AND SUPPLY COST	\$2,000

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
Administrative Support: \$34,024 / year x 1 year	\$34,024
TOTAL CONTRACT COST	\$34,024

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2004	Leader	\$26,949	1	\$26,949	ES	P,C
2005	Leader	\$80,846	1	\$80,846	ES	P,C
2006						
TOTAL	Leader	\$107,795	1	\$107,795	ES	P,C
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P,M,C
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services	M = Materials/Supplies
T = Travel	C = Contract
F = Suppression	

III. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan

IV TOTAL COST BY JURSDICTION

JURISDICTION	UNITS TREATED	COST
NPS	1	\$107,795
TOTAL COST		\$107,795

BURNED AREA EMERGENCY STABILIZATION PLAN

PART F - SPECIFICATION

SPECIFICATION TITLE:	Assess Abandoned Mine Hazards	JURISDICTIONS:	NPS-MOJA
PART C: LINE ITEM:	#14, Assess Abandoned Mine Hazards	FISCAL YEAR:	2006
ESR REFERENCE #:	8.3.3.2 Hazmat and Facility Assessment and Stabilization	SPECIFICATION TYPE:	ES

I. WORK TO BE DONE

A. Provide a Brief General Description of Treatment
Assess affects of the Hackberry Complex fires on 27 abandoned mines including safety hazards, effects on historic resources, bat habitat and presence of hazardous materials.
B. Describe Specific Treatment Location or General Description of Suitable Sites for Treatment
27 select abandoned mine sites are described in Hackberry Complex Abandoned Mine Land (AML) Assessment and identified on the Hackberry Complex AML site location map.
C. Provide and Number Detailed Design/Construction Specifications
1. Conduct historic literature review and document compilation regarding 27 AML sites.
2. Complete National Park Service Mined Lands Field Inventory Data Sheet at 27 select AML sites.
3. Complete assessment of actions on cultural resources consistent with section 106 NHPA at select 27 AML sites.
D. Describe Purpose of Treatment Specification – What Resource will be Protected
The purpose of the treatment is to assess the condition of safety at 27 of 111 mines within the burn perimeter and determine if the Hackberry Complex fires changed the condition of safety, had an adverse effect on historic properties, affected bat habitat or involved hazardous materials.
Visitor and staff safety, cultural resources, bat habitat and environmental quality will be protected.
E. Describe Treatment Effectiveness Monitoring

3. LABOR, EQUIPMENT, MATERIALS, AND OTHER COST:

PERSONNEL SERVICES (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-11/5 (AML Specialist) \$44.83/hr X 640hrs X 1fy	\$28,694
GS-11/5 (Historian) \$44.83/hr X 640hrs X 1fy	\$28,694
TOTAL PERSONNEL SERVICE COST	\$57,388

EQUIPMENT PURCHASE, LEASE, OR RENTAL (Item @ Cost/Hours or Cost/Day or # Days X # Fiscal Years = Cost/Item) Note: Purchase requires written justification that demonstrates cost/item benefits over lease or rental.	COST/ITEM
GSA vehicle @ \$500/month x 4months	\$2,000
TOTAL EQUIPMENT PURCHASE, LEASE, OR RENTAL COST	\$2,000

MATERIAL AND SUPPLIES (Item @ Cost/Each X Quantity X # Fiscal Years = Cost/Item)	COST/ITEM
Copying of support records	\$300
TOTAL MATERIAL AND SUPPLY COST	\$300

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X # Fiscal Years = Cost/Item)	COST/ITEM
AML Specialist @ \$127 x 10 nights x 1fy	\$1,270
Historian @ \$127 x 10 nights x 1fy	\$1,270
TOTAL TRAVEL COST	\$2,540

CONTRACT COST (Labor or Equipment @ Cost/Hour X # Hours X # Fiscal Years = Cost/Item)	COST /ITEM
TOTAL CONTRACT COST	COST /ITEM

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNIT COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
2005						
2006	AML site	\$2,304	27	\$62,228	ES	P
2007						
TOTAL	AML site	\$2,304	27	\$62,228	ES	P
FUNDING SOURCES F = Fire Suppression ESR = Emergency Stabilization & Rehab. OP/O = Agency Operating Fund EWP = Emergency Watershed Program		SPECIFICATION TYPE ES = Emergency Stabilization R = Rehabilitation FS = Fire Suppression		METHOD OF COMPLETION P = Agency Personnel Services C = Contract EFC = Emergency Fire Contract FC = Crew Labor Assigned to Fire		

SOURCE OF COST ESTIMATES

Put Letter (P,M,T,C, or F) Next to Appropriate Cost Estimate Source (1-5) Below	
1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	P/T
3. Estimate supported by cost guides from independent sources or other federal agencies.	
4. Estimates based upon government wage rates and material cost.	P/T
5. No cost estimate required – cost charged to Fire Suppression Account (not tracked in plan)	
P = Personnel Services	M = Materials/Supplies
T = Travel	C = Contract
F = Suppression	

4. RELEVANT DETAILS, MAPS, AND DOCUMENTATION INCLUDED IN THIS REPORT

List Relevant Documentation and Cross-References within ESR Plan
Mine location table and site location map <i>Minerals in the East Mojave National Scenic Area, California: A Minerals Investigation Volume I</i> MOJA NP historical site records and sketches MOJA geologist site records BLM claim records CA-SBD-0614/H CA-SBD-8045/H

5. TOTAL COST BY JURISDICTION

JURISDICTION	UNITS TREATED	COST
NPS-MOJA	27	\$62,228
TOTAL COST		\$62,228

**BURNED AREA EMERGENCY STABILIZATION PLAN
HACKBERRY COMPLEX**

APPENDIX I RESOURCE ASSESSMENTS

- **MINE SAFETY ASSESSMENT**
- **WILDLIFE RESOURCE ASSESSMENT**
- **CULTURAL RESOURCE ASSESSMENT**
- **VEGETATION RESOURCE ASSESSMENT**
- **SOIL AND WATERSHED RESOURCE ASSESSMENT**
- **PUBLIC SAFETY RESOURCE ASSESSMENT**



BURNED AREA EMERGENCY STABILIZATION PLAN
HACKBERRY COMPLEX
MINE SAFETY RESOURCE ASSESSMENT

I. OBJECTIVES

- Determine if fire behavior has created an imminent human safety hazard at mine sites in the burned area
- Determine if fire behavior has adversely effected historic features at mine sites in the burned area
- Determine if fire behavior has adversely effected bat habitat at mine sites in the burned area
- Determine if fire behavior has adversely effected environmental quality relating to hazardous material

II. ISSUES

- Imminent safety hazards at mine sites resulting from the presence of fire
- Fire damage to historic features
- Fire damage to underground mine related bat habitat
- Environmental quality affects relating to hazardous materials at burned mine sites

III. OBSERVATIONS

A. Background - Macedonia Mining District and surrounding areas

The first mining in the East Mojave began in the Providence Mountains/Mid Hills/New York Mountains region in 1863 in the Rock Springs Mining District. Mining declined several years later after conflicts with Native Americans increased, milling of ore required long trips to San Francisco and isolation took its toll (King et al. 1981:304). Construction of a mill in the area in the 1870s improved prospects for miners, but mining continued on a small scale and was not necessarily very productive. When the Santa Fe Railroad was constructed through the East Mojave Desert in the 1880s profitable mining began in the area. The period from 1900 to 1919 was the heyday of mining in the area, but the mining declined after World War I. Mines in the area extracted copper, lead, silver, gold, chromium, manganese, tungsten, and vanadium. (King et. al. 1981)

111 Abandoned Mine Land (AML) sites exist within the fire perimeter, 27 of these mines have one or more openings that could pose a risk to visitor safety through falling or entrapment. The mines of the district are generally of the historic period, mine openings are supported by wooden structures and show little or no evidence of modern excavation techniques. Wooden support structures, buildings, "A" frame or ore bins are readily burnable in the presence of wildfire. Underground workings, mine openings, historic features and bat habitat can be adversely affected by the fire.

B. Reconnaissance Methodology and Results

Mine sites were identified and targeted for survey using the Mid Hills, Pinto Valley, Columbia Mt, Woods Mts and Hackberry Mt. Quadrangles, existing MOJA GIS mine records, US Bureau of Mines report MLA 6-90 (attachment 2) and the personal knowledge and site records of the local resource area mineral geologists (Attachment 3), fire planner and historian. Select mine sites were surveyed from the air using a standardized survey process. Sites were observed and a preliminary site assessment was performed regarding condition of safety, surface expression of mine workings and evidence of burned structures. The process consisted of identifying known mines by reviewing available literature regarding mines in the district and completing aerial surveys of known, recorded mines.

C. Findings -

Twenty-seven of 111 mines within the complex have significant workings that may have been affected by fire and could pose a fatally hazardous condition to visitors or staff as a result of fire related damage to support or safety structures. Aerial observations made by BAER AML staff provided support information that resulted in this assessment and specification for treatment. The information gained was inadequate to fully assess changes attributable to the fire that could have changed the condition of safety and resource impacts at mine sites. Therefore, in depth, on site survey, by a team of resource specialists is recommended.

Eleven sites were located and surveyed from the air. Observations were recorded and photographs were taken. The sites are referenced by PSI number, name, and legal description. The PSI number is a unique identifier first used in MLA 6-90.

The BAER AML specialist and other BAER team members observed active collapsing of shafts and adits resulting from burned away structural members like shaft collars or adit portal supports. In many cases the structural supports have burned away, but the shaft or adit has not yet collapsed resulting in an **extremely unsafe condition**. Unconsolidated aggregate material previously supported by the collar or portal support is now hanging, in a vertical position, poised for collapse. An unsuspecting visitor or curious staff member who approaches a mine opening in this condition, particularly a shaft, could be caught in an "hourglass" collapse of the unconsolidated surface material. Photo #570 shows an unsupported collar in this condition. Photo 451b shows the aftermath of an "hourglass" collapse.

The BAER AML specialist did not determine the claim status of the mine sites investigated or recommended for further survey.

Wildhorse Fire

PSI#527 Providence Mine

One shaft and three adits are present. No evidence of fire damage to support structures was evident from the air. Literature indicates multiple workings and structures prior to the fire. The site is remote, inaccessible and in wilderness. Reference photo #527C

PSI#522 Frisco #3 Mine

Five adits, two incline shafts. Multiple structures appear to have burned. Refer to photo #522b

PSI#497 Globe Mine

Literature indicates extensive underground workings are present. Support structures appear to have been burned away. The mine is road accessible. Refer to photo #497c

PSI#502 Frisco #1 Mine

Two collapsed openings were observed. Reference photo #502a

#457 Castor-Pollux (Columbia)

Four shafts, three adits. Extensive evidence of underground workings, milling and occupation. Multiple structures and historic fabric lost in the fire. Historic and modern occupation is evident, the site is road accessible. Reference photo #457b

PSI#459 Francis Mine

Six shafts, three adits. Evidence of burned structures, support members burned. Main shaft appears to be unstable and about to collapse. Site is road accessible. Reference photo #459c

PSI#414 Butcher knife Mine

Two shafts present. The site shows evidence of burned structures. Both shafts appear to have lost support structures. The site is road accessible. Reference photo #414b

PSI# 424 Barnett Mine

Six shafts, two adits with 1,000 feet of underground workings reported. Extensive documented structures including ore bins were lost in the fire. Three shafts have fence structures protecting visitors from entry. The condition of fencing is unknown. The site is in wilderness. Reference photo #424a

Hackberry Fire

Hackberry Spring

The spring has been modified with mine like workings to benefit water utilization. The site is accessible by road.

PSI#581 Lucky Penny Mine

Two adits present. Reference photo #581

PSI#577 Ben Hur Mine

One adit and one incline shaft.

IV. RECOMMENDATIONS

A. Emergency Stabilization

Assess Abandoned Mine Hazards –

In depth, on site surveys are required to determine the condition of safety resulting from the Hackberry Complex fire at 27 substantial mine sites within the burn perimeter. The condition of previously recorded historic structures, suitability of bat habitat and presence of hazardous materials should be evaluated by trained professional specialists having experience working with abandoned mines in a desert environment.

The attached mine survey form should be completed and recommendations made for potential closure of mines. A preliminary assessment of suitability of bat habitat should be made and Section 106, NHPA should be completed. The survey crew should assess each of the 27 mines regarding changed condition of safety and resource impacts resulting from the fire.

The AML crew should assess mines for hazards as soon as possible and before winter season visitors visit the burned area. The enclosed Assess Mine Hazards specification provides funding for this project October 1, 2005.

Regardless of funding, the Gold Valley mine needs to be signed or fenced in such a way that keeps curious visitors away from the edge of the mine.

27 mine sites having one or more substantial opening

PSI	MINE	LOCATION
X 488	SS 20-22, 27-29	T11N R14E sec 09
XXXX	Hackberry Spring	T11N R16E sec 01
X 521	HH 1&2	T11N R14E sec 16
X 488	UNK	T11N R14E sec 10
X 465	UNK	T11N R14E sec 04
X 457	Columbia	T11N R14E sec 03
X 470	Dixie 2	T11N R14E sec 03
X 501	UNK	T11N R14E sec 09
X 526	SS #63-64 prospect	T11N R14E sec17
X 1038	UNK	T11N R14E sec07
X 414	Butcher Knife	T13N R15E sec 05
X 424	Barnett	T12N R15E sec 11
X 426	Barrett	T12N R15E sec 18-17

X 450	Denib	T11N R14E sec 04
X 459	Francis	T11N R14E sec 04
X 527	Good Hope	T11N R14E sec 21
X 570	Gold Valley	T11N R15E sec 06
X 577	Ben Hur	T11N R16E sec 12
X 581	Lucky Penny	T11N R17E sec 07
X 475	SS 28	T11N R14E sec 04
X 484	SS 17-19	T11N R14E sec 09
X 491	Blue Jay	T11N R14E sec 10
X497	Globe	T11N R14E sec 09
X 502	Frisco #1	T11N R14E sec 09
X 522	Frisco 3	T11N R14E sec 16
X 525	SS 51-52, 60-61	T11N R14E sec 17
X 527	Providence	T11N R14E sec 16

Using the attached National Park Service Mined Land Field Inventory Data Sheet, specialists should visit the identified sites and complete survey. Surveys record the mine name, location, access route, whether the mine is active or abandoned and the area of disturbance. An itemized accounting of the mine openings, list of potential hazards, waste rock or mill tailings present, environmental impacts, cultural resource potential, frequency of visitor use and potential hazard mitigation methods. A site sketch is made during the visit, photos documenting the site are taken, and a relative hazard rating is derived from a formula incorporating relative ease of access and a human health hazard rating. An assessment should be made regarding the extent to which the fire affected safety and resources associated with the mine. If unsafe conditions resulting from the fire can be mitigated, a mitigation strategy should be recommended.

Attachment 1: Mine survey form

NATIONAL PARK SERVICE MINED LANDS FIELD INVENTORY DATA SHEET Geologic Resources Division – (303) 969-2099

Park unit MOJA Inspected by _____ Date _____

A. Site/mine name

Location: State _____ County _____ Watershed name _____

USGS quadrangle _____ UTM coordinates _____ N X
E

Township, range, section, and ¼ section

Access route (describe)

B. Operation type: pit or quarry__ underground__ mill__ placer__ other

Commodity:

Operation status: abandoned__ active__ administrative use (NPS sand/gravel, staging area, equipment storage, etc.)

C. Size of surface disturbance: _____ acres, _____ length x _____ width

D. OPENINGS - DO NOT GO INTO ABANDONED UNDERGROUND MINES

ID #	OPENING [e.g., adit, shaft, pit (dimensions)]	ID #	OPENING

E. HAZARDS: If the following exist, place a check mark next to the item. Where applicable, write the number of the opening

with which the hazard is associated.

1. ☐ structures (describe number, type, condition)
2. ☐ debris (describe type, extent)
3. ☐ highwall - average length___, height___ benches? (y/n) ☐ describe:
4. ☐ unstable rock (describe rock type)
5. ☐ pools (describe size, number, location)
6. ☐ explosives **DO NOT TOUCH** (describe type if known)
7. ☐ machinery (describe type, number)
8. ☐ hazardous substances - **DO NOT OPEN CONTAINERS** (describe: e.g., fuels, lubricants, chemicals, transformers; drums, containers, storage tanks; altered soil, vegetation, water; dumps, fill areas)
9. ☐ subsidence features (describe)
10. ☐ other

Notes on hazards:

11. ☐ tailings or waste rock piles [describe number, location, and approximate dimensions (lxwxh)]

F. RESOURCE IMPACTS: Include all areas associated with the mine, such as access roads, waste rock piles, refuse piles, etc.

Place check marks next to the items that apply.

1. Water

1. ☐ Water is flowing out of mine workings (adits, shafts, pits, etc.). pH_____
2. ☐ Water is standing in mine workings (adits, shafts, pits, etc.). pH_____
3. ☐ Water is flowing through or over the tailings/waste rock pile (if it exists).
4. ☐ The ground or stream bottom is discolored around the site.
5. ☐ There is evidence of aquatic life in the drainages near the site.
6. Estimate the distance to the nearest drainage:

2. Sediment

1. ☐ During runoff, sediment from the site is transported by water into a nearby drainage or stream channel.
2. ☐ Other evidence of erosion (specify, e.g., gullies, scarps, cracks)

3. Vegetation

1. Characterize the vegetation: healthy___, struggling___, dead___, nonexistent
2. If there is vegetation damage, state why you think it is damaged, and try to quantify the amount of damage.
3. ☐ The tailings/waste rock pile (if it exists) is revegetating naturally.

4. Wildlife (in the mine or in/on the tailings or waste rock pile)

1. ☐ Wildlife inhabit or visit the site. (Look for droppings, tracks, and nests. This is especially important in underground sites since evidence of animal habitation is a good clue about the air quality. Specify types of wildlife, paying special attention to endangered species, e.g., bats, rodents.)

2. ☐ No wildlife use detected.

5. Visual

1. Characterize the visibility of the site: easily seen___, seen when pointed out or sought___, hidden
2. ☐ Site is visible from visitor facilities, or well-visited roads, trails, or viewpoints.
From what distance is the site easily visible?

G. Cultural resource potential? (y/n) __ (describe)

If applicable, describe interpretive potential.

H. Visitor/staff use? (y/n) __ 1. Frequency of visitation/use (high/medium/low) _____ (describe evidence)

2. Rescue information:

I. Potential mitigation/closure/reclamation methods:

1. If you were to design a reclamation plan for this site, what would you do? Check the appropriate boxes and describe below if necessary:

- | | |
|--|--|
| <input type="checkbox"/> cable nets (bolted over entrances) | <input type="checkbox"/> install warning signs |
| <input type="checkbox"/> bulkheads (e.g. rock and mortar or formed concrete installed in entrances) | <input type="checkbox"/> recontour |
| <input type="checkbox"/> polyurethane foam (PUF) (expands 30X when installed; earthen backfill at surface) | <input type="checkbox"/> topsoil or other soil amendments |
| <input type="checkbox"/> gates | <input type="checkbox"/> revegetate, either by seeding or transplanting |
| <input type="checkbox"/> explosives (blast openings closed) | <input type="checkbox"/> stabilize deteriorating structures |
| <input type="checkbox"/> backfill shafts, pits, entrances | <input type="checkbox"/> destroy deteriorating structures |
| <input type="checkbox"/> fences | <input type="checkbox"/> no action - (The site is naturally reclaiming and poses no resource impacts or safety hazards.) |
| | <input type="checkbox"/> other |

Describe details:

2. Mitigation status: none __; temporary measures - fence __, sign __, other _____; hazards adequately mitigated (y/n) __; reclamation complete (y/n) __. Comments:

J. On an attached piece of paper, draw a **SKETCH MAP** of the site. Show map orientation, approximate scale, access route, drainages in the vicinity, and the location of each of hazard. (Identify each opening by its number as indicated in Section D.)

K. Attach **LABELED PHOTOGRAPHS** of the site, including photographs of hazards, resource impacts, access routes, and anything else that might be useful. PHOTOGRAPHS HELP TREMENDOUSLY IN EVALUATING MANAGEMENT OPTIONS.

L. Hazard rating (0-6) __ **Access rating** (0-10) __ **Natural resource rating** (H/M/L)

NATIONAL PARK SERVICE MINED LANDS FIELD INVENTORY INSTRUCTION SHEET
Geologic Resources Division – (303) 969-2099

Identify and locate all active and abandoned mineral sites in your park:

- * look on maps for mining symbols
- * search aerial photographs
- * search through archival records
- * talk to locals and park staff
- * follow old dirt roads
- * check with state mining agencies

For oil wells, please fill out **ONLY** sections A, B, and J on the Inventory Data Sheet.

Go to each site and fill out the inventory form. DO NOT GO INTO ABANDONED UNDERGROUND MINES

If you do not know some information, leave the question blank. Please quantify whenever possible (e.g., size of opening, waste rock pile dimensions, pertinent distances, etc.). If your comments exceed the space given or if you wish to provide additional information, attach extra pages. If you have questions, call MMB.

A. Fill in the mine claim or **site name** and its **location** -- USGS quadrangle, UTM coordinates, township, range, section, ¼ section, and access route. If you do not know the name of the site, invent a logical name and put quotation marks around it on the form. (e.g., "Clear Creek Site", "Campground Site") When describing access route, note the site's approximate distance and direction from nearby landmarks, paths, and roads.

B. What is/was the **type of operation**? (e.g., underground mine, surface pit or quarry, mill, placer, other). What **commodity** is/was mined at the site? (e.g., gold, copper, sand and gravel, coal) Note the status of the operation: abandoned, active (full-time or intermittent), or administrative (used by the NPS for sand and gravel storage and/or extraction, equipment staging area, bone yard, etc.)

C. Estimate the **size of the operation** in acres, miles, feet, etc. (Total surface area impacted, not underground.)

D. **Identify openings** - Are there hazardous openings at the site, e.g., shafts, pits, quarries, or adits? Number and describe each opening (include dimensions) in the table, e.g., #1 / adit (6'w x 7'h), #2 / pit (15' x 15' x 10'd), #3 / shaft [8' x 8' x 50'd est'd. (to estimate depth, drop rock; to measure, use long tape measure)] The apparent "bottom" of a pit or shaft may be a blockage; the actual shaft may be deeper. If there are more than 10 openings at the site, continue table on another piece of paper attached to the Inventory Data Sheet.

E. **Identify hazards - USE CAUTION** - Mark the location of each hazard on your sketch map (see J).

1. Are there structures at the site? If so, describe the number, type, and condition.
2. Is there debris at the site? If so, quantify and characterize.
3. Are there any highwalls or unnatural benches at the site? If so, give dimensions and description.
4. Is the rock in which the mine is excavated stable (competent)? Does it appear that slabs or smaller rock debris could easily be dislodged? Looking from outside an underground mine, a good indicator is to note how much rock debris is lying on the floor. If rock type (sandstone, shale, limestone, granite, quartzite, etc.) or formation name (e.g., Morrison Formation) is known, please specify.
5. Are there any pools of water visible in the mine workings? Locate on map and estimate depth.
6. Are there signs of abandoned explosives present (boxes, fuses, shot wire, etc.)? If you find explosives (e.g., dynamite, blasting caps, misfires), **DO NOT TOUCH** them under any circumstances. Make note of labels or packaging information and contact a certified blaster for disposal.
7. Is heavy machinery abandoned at the site? Specify.
8. Did you find, or do you suspect the presence of hazardous substances? [e.g., fuels, lubricants, chemicals, chemical odors, leaky transformers; drums, containers, storage tanks; dumps, fills (possible cover for dumps); stained soils, unexplained vegetation anomalies, "sterile" or modified water bodies] Make note of any labels or packaging information. **DO NOT OPEN CONTAINERS.**

9. Are there subsidence features around the mined area, e.g., slumping or cave-ins? Describe.

10. Describe anything else you see that you think would be hazardous.

11. Are there piles of tailings (crushed/milled/processed rock), ore, waste rock, or sand and gravel present? Comment on each pile's size, location, and if you think the rock has been processed.

F. Identify **resource impacts**

G. Does the site have potential **cultural significance**? Is it on the National Register of Historic Places? Does it have interpretive value? Is it being interpreted? If so, how?

H. Do the visitors or staff visit/use the site?

1. Rank the **frequency/evidence of visitation**: high=large amounts of trash, footprints, graffiti, etc.; medium=moderate amounts; low=no signs of visitation. Rank the site as high if the park staff knows that the site is regularly visited.

2. List the address and phone number of the agency you would contact in case of an emergency at this site (sheriff's department, mine rescue teams from local mines, etc.). Make sure that the Protection Division has this information.

I. Suggest an appropriate **mitigation/closure/reclamation** method.

1. Check all the boxes that apply and write a description of your plan, if necessary. Make recommendations for each of the identified openings in section D. Closures can be designed to preserve wildlife habitat, e.g., bat gates. Fences are useful for preventing entry by an unwary visitor, but are easily vandalized and require periodic monitoring and maintenance, and do not prevent the intentional intruder. Ordering information for warning signs is available through MMB.

2. Check the appropriate box for mitigation status and provide any appropriate comments, e.g., note vandalized closures and repair needs, need for upgraded closures, or describe reclamation measures needed.

J. Draw a **SKETCH MAP** of the site. Show map orientation (north arrow), approximate scale (e.g., 1"= 50'), access route, and local drainages, trails, and roads. Attach a photocopy of the appropriate portion of the USGS topographic quadrangle with the site location labeled; include the map title and site coordinates. If the park has multiple sites, attach a park map with each site location labeled.

K. Attach **LABELED PHOTOGRAPHS** of the site. Color prints are best. Include all aspects, e.g., all mine entrances, hazards, resource impacts, access route, evidence of visitation, interpretive or warning signs. If developing film is a problem, send MMB the exposed film (with a numbered list describing of each photograph) and we will develop it. Photographs can be the most important part of the inventory.

L. List the **ratings** for each of the 3 categories. A guide for this ranking is attached to this instruction sheet. Note that there are three categories under the accessibility ranking. To determine the accessibility ranking for each site, add the point values in each column together. For example, a site that is accessible by car on a designated road and is not easily seen from a well-visited area would have an accessibility ranking of 9.

DEFINITIONS

mine site - an area with mining features (A "site" may include many features, e.g., adits, shafts, pits, mill)
shaft - a vertical (or near vertical) passage into a mine
adit - a horizontal or inclined passage into a mine (You can walk into an "adit," but must climb into a "shaft.")
tailings - processed ore (crushed, milled, treated rock) from which the desired material (typically metal) has been removed. Usually a fine, sand-like consistency.

**DATA SHEET TO THE GEOLOGIC RESOURCES
DIVISION. RETAIN THE ORIGINAL IN PARK FILES.**

SEND A COPY OF THE COMPLETED INVENTORY

waste rock - sub-grade, blasted (but unprocessed) rock, typically abandoned on-site near mine openings
highwall - steep wall bordering a quarry or pit; if quarry is deep, may be "benched" to permit vehicular access.
mitigation - the reduction or elimination of a hazard (does not necessarily include reclamation)
reclamation - the elimination of all hazards and impacts
misfire - an undetonated explosive charge

Ranking System for Hazards

	Danger Rating Associated With Hazard
5 Pts	<ul style="list-style-type: none"> ·Any coal mine ·Vertical shafts, winzes, or underhand collapsed stopes > 20' ·Irrespirable air ·Instantaneous fatal injury could occur due to mine-related hazard
4 Pts	<ul style="list-style-type: none"> ·Large unstable structures ·Deep pools of water from which it would be difficult to climb out. ·Potential fatal injury could occur ·Major collapse zones
3 Pts	<ul style="list-style-type: none"> ·Radiation potential ·Large stopes overhead - seemingly stable ·Highwalls > 20' drop-off not apparent from above ·Serious injury could occur
2 Pts	<ul style="list-style-type: none"> ·Highwalls > 20' – drop-off apparent from above ·Rubble around but rock is generally stable ·Moderate injury could occur
1 Pt	<ul style="list-style-type: none"> ·Minimal injuries could occur like tripping, bumping head, cutting oneself ·Highwalls < 20' in area where such drop-offs are common naturally ·minimal injury possible
0 Pts	·No inherent hazards; no injury potential above normal condition

* Add 1 point for any site that has an adit > 500' in length

Difficulty of Access (For each site, add the point value in each column together)

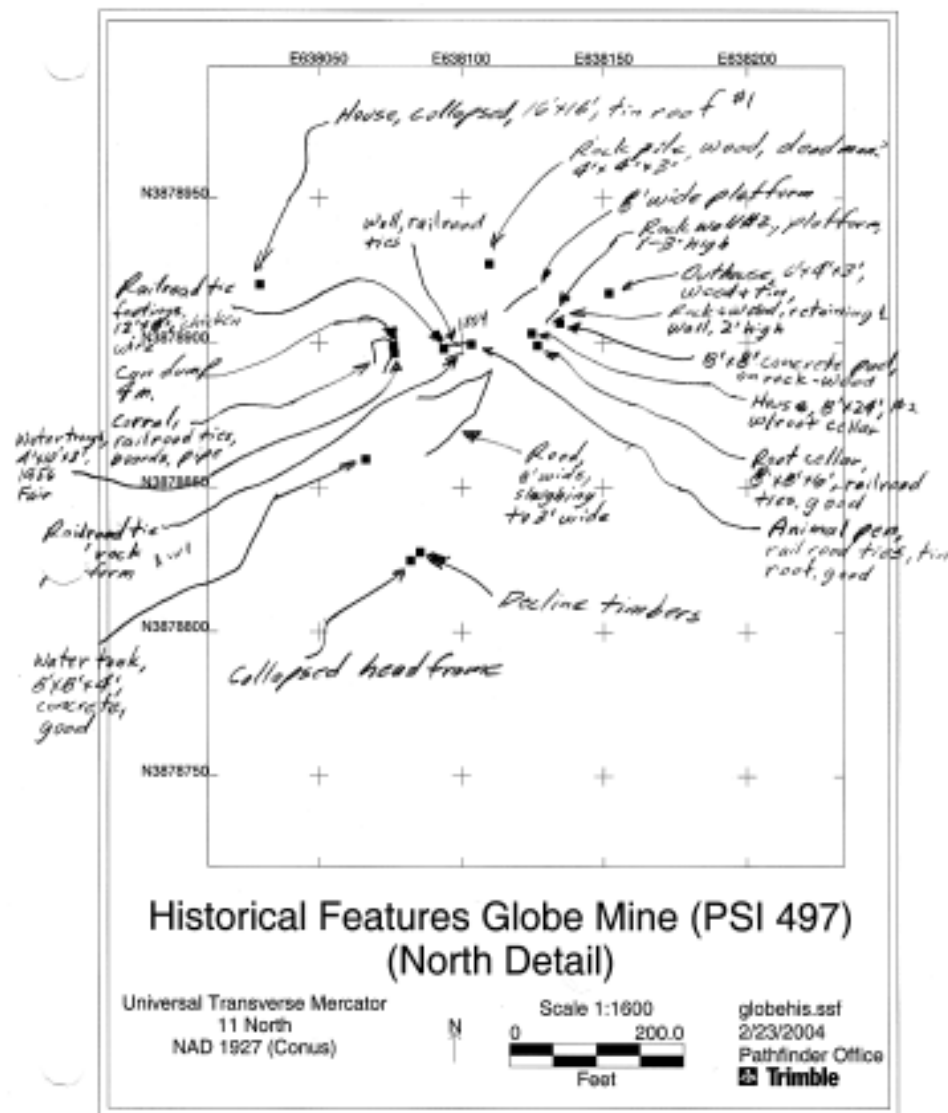
	Type of Access	Method of access	Attraction of site
5 Pts	Good road with mine as the specific destination	Car	
4 Pts	Good dirt road without specific destination	Car	
3 Pts	Dirt road without specific destination	Easy hike < 5 mi	
2 Pts	Near a road/path (within 1 mi)	<ul style="list-style-type: none"> ·Easy hike > 5 mi ·Moderate hike < 5 mi 	
1 Pt	> 1 mi from road/path	<ul style="list-style-type: none"> ·Moderate hike > 5 mi ·Hard hike < 5 mi 	Seen easily from path/road or other well-visited area so that site is an attraction
0 Pts		Hard hike > 5 mi	Not easily seen

Attachment 2: MLA 6-90, example of site data record, Globe Mine

Table 2. Mines and prospects in the East Mojave National Scenic Area, San Bernardino County, CA--Cont.

Map No.	Name (Alternate name) Owner/operator	MILS number Location	Summary	Workings and production	Sample and resource data
497	Globe mine	0660710103 111N R14E sec.09	Roughly tabular, pinch and swell quartz veins and a zone of sheared and brecciated gneiss and quartz trend east and dip 30°-60° N. The zone is exposed for 240 ft along strike, 275 ft down-dip and is about 5.6 ft thick. Nearby outcrops suggest a possible strike length of 1,500 ft. Quartz is white to dark blue-gray and contains pyrite, limonite after pyrite, galena, chalcocopyrite, specularite, and probable sphalerite. Chlorite and epidote are common alteration minerals and hexahydrite encrustations have weathered out on the ribs in shear zones. felsic volcanic rock exhibiting sericitic and chloritic alteration contains disseminated pyrite in two locations in the haulageway.	A 275-ft-long inclined shaft with 400 ft of drifts and 100 ft of stopes is connected by a 700-ft haulageway to a partially collapsed adit and shaft; three inclined shafts, a caved shaft, a 30-ft adit, and five pits. Tucker and Sampson (1930, 1931) reported very high-grade ore shipments.	Indicated subeconomic resources of 30,000 tons and inferred subeconomic resources of 80,000 tons at an average grade of 0.05 oz/ton gold and 1.8 oz/ton silver. Seventy chips, 3 random chips, and 2 select samples were taken. Fifty-one contained detectable gold, values ranged from a trace to 1.85 oz/ton; 12 contained >0.1 oz/ton gold. Fifty contained detectable silver, values ranged from 0.053 to 65.9 oz/ton; 16 exceeded 1.0 oz/ton silver. Thirty-eight contained 0.00003 to 0.01902 copper, 42 contained 0.0044 to 0.34% lead, 7% contained 0.0035% to 0.13% zinc, and 59 of 62 samples analyzed contained 0.0018% to 0.0330% molybdenum. Of 21 analyzed for tin and tungsten, 26 contained 0.02% to 0.04% tin and 9 contained 0.00063 to 0.0054% tungsten. Geologic setting, metal values, and similar deposits in the vicinity suggest additional gold, silver, and possible molybdenum resources may be present at depth.
498	Prospect	0660711745 111N R14E sec.09	An iron-oxide-stained quartz vein, 0.3 to 0.5 ft thick, strikes N. 25° E. and dips 20° SE. in silicified granite gneiss.	One adit, 10 ft long.	One chip sample contained 0.0015 oz/ton gold, 0.29% oz/ton silver, 0.12% lead, 0.0034% molybdenum, and 0.042% blanch. Significant nearby properties and the sample value suggest the prospect merits additional investigation.
499	Prospect	0660711749 111N R14E sec.09	Small quartz lenses occur in iron-oxide stained, fractured banded gneiss.	One pit.	One grab sample contained 0.006 oz/ton gold, 0.14 oz/ton silver, 0.0031% zinc, and 0.002% molybdenum. The presence of anomalous gold and nearby past producers indicate that additional studies are warranted.

Attachment 3: MOJA Geologist mine site records, Globe Mine (Pine and Weasma, 2004)



Recommendation

Management non specification related

- Administrative roads to mine sites should be temporarily closed to visitor traffic
- Safety signs should be installed at mines with uncontrolled access prior to AML site survey
- Claim status should be determined for mines within the fire perimeter and access to claimants should be restricted until safety surveys can be completed
- The burned area should be surveyed for previously unrecorded mine sites
- The Gold Valley mine is extremely unsafe and in proximity to the Mid hills to Hole-in-the-Wall trail, signage and temporary safety fence should immediately be installed

V. CONSULTATIONS

Ted Weasma, Geologist, Mojave National Preserve
Larry Whalon, Chief of Resources Management, Mojave National Preserve
Davis Nichols, Archeologis, Mojave National Preserve
Sandee Dingman, Resource Advisor, Fire Planner, Mojave National Preserve

VI. REFERENCES

MLA 6-90 US Dept. of the Interior, Bureau of Mines, *MINERALS IN THE EAST MOJAVE NATIONAL SCENIC AREA, CALIFORNIA: A MINERAL INVESTIGATION VOLUME I*

King, Chester and Dennis G. Casebier
"Background to Historic and Prehistoric Resources of the East Mojave Region" Cultural Resource Publications Anthropology-History, Bureau of Land Management, California Desert District, 1981.

Chris Holbeck, National Park Service, Voyageurs National Park, 218-283-9821

**INTERAGENCY
BURNED AREA EMERGENCY STABILIZATION PLAN
HACKBERRY COMPLEX
WILDLIFE RESOURCE ASSESSMENT**

I. OBJECTIVES

- Assess effects of the fire and suppression actions to Federally listed Threatened, and Endangered species and their habitats.
- Conduct Section 7 Emergency Consultation with the U. S. Fish and Wildlife Service.
- Prescribe emergency stabilization measures and/or monitoring.
- Assess effects of proposed stabilization actions to listed species and habitats.

II. ISSUES

- One federally listed species and designated Critical Habitat area occurs within the fire area.

III. OBSERVATIONS

A. Background

The Hackberry Complex burned approximately 70,912 acres of the Mojave National Preserve (MNP) between June 22 and 28, 2005. The first of five fires, which eventually were grouped as the Hackberry complex, began at approximately 1200 hours as the result of a dry lightning strike in the Hackberry Mountains of the MNP. Within seven hours four more fires were started in the area. Four of these fires burned together with only the Hackberry fire remaining isolated. Significant runs to the north and west were observed. The Preserve experienced heavy rainfall during the winter of 2004-2005 resulting in abundant growth of shrubs and annual grasses. The lush vegetation allowed the fire to spread more effectively by carrying it through normally sparse patches on the landscape. The fire was declared contained at 1800 hours on June 27, 2005. Approximately 63,127 acres within the fire perimeter are managed by the MNP, 6,086 acres are privately owned, and 1,699 are owned by the state of California. Within the acreage managed by MNP, 51,157 acres of the fire area occur within designated Wilderness areas.

No dozer lines were constructed to suppress the fire on MNP. Fire engines remained on roads, except in one instance when they traveled off-road to avoid being over run by the approaching fire. A small amount of fire handline was produced in higher elevations (>4,500 ft) in the early stages of suppression efforts. A backfire operation of approximately 500 acres was conducted along a small section of the western flank of the fire to prevent the flame front from reaching desert tortoise Critical Habitat in the Cima Dome area of the Preserve. Fire retardant was dropped in three areas of the preserve, all of which were above 4,500 feet. Additional suppression actions included the set-up of one helibase, establishment of water dip sites filled by water tenders and used to support bucket drops, and establishment of an incident command post at Hole in the Wall Fire Center and a second fire camp at Nipton.

The MNP is located in the Mojave Desert in southeastern California. The regional climate is arid, with rainfall ranging from 2 inches at lower elevations to 10 inches at high elevations. Nearly two-thirds of the annual precipitation falls between November and March. The average maximum summer temperature exceeds 100 degrees Fahrenheit during July and August. Average minimum temperatures fall below freezing only during the months of December and January.

The MNP is characterized by flats and bajadas at lower elevations consisting of scattered shrubs and interspaced annual grasses and forbs. Higher areas of the Preserve contain steep slopes, rocky crags, and mesas. Pinyon juniper, Joshua tree, and Mojave yucca are dominant species at these elevations.

The preserve contains designated desert tortoise Critical Habitat and wildlife species typical of arid deserts. There are numerous natural springs and human-made water sources throughout the Preserve. Four federally listed wildlife species occur on the Preserve, with only one (desert tortoise) occurring within the fire area.

B. Reconnaissance Methodology and Results

Information for this assessment is based on a review of relevant literature, MNP wildlife sighting and habitat inventory information, consultation with U. S. Fish and Wildlife Service, and personal communication with MNP biologists and management personnel. Information on the effects of the fire came from interviews with fire suppression personnel and fire area reconnaissance on June 27, 28, 29, and July 1 2005, including helicopter flights over the fire area on June 27 and 28. To better understand the species and habitat information briefly discussed in this wildlife assessment, it is important to review the Hackberry Complex BAER Vegetation and Soil and Watershed Assessments. These reports contain more detailed descriptions of pre-fire vegetation, post fire vegetative recovery estimates, post fire soil conditions, and hydrological features.

The purpose of this assessment is to discuss the potential effects of fire, suppression actions and proposed emergency stabilization activities to federally listed species. Only a few of the total array of species that may occur in the area are discussed in this report. The list of species to be addressed was developed from documents referenced in this report and input from MNP and FWS biologists and resource managers.

This assessment is not intended to definitively answer the many specific species effects questions that are inevitably raised during an incident such as the Hackberry Complex Fire. The only focus of this assessment is to determine the potential for immediate, emergency actions that may be necessary to prevent further impacts to federally listed species and habitats occurring on MNP lands.

C. Findings

1. Biological Assessment for Federally Listed Species

Direct effects as described in this report refer to individual mortality, or disturbance that results in flushing, displacement or harassment of the animal. Indirect effects refer to modification of habitat and/or prey species and possible subsequent affects to the species.

DESERT TORTOISE: The range of the desert tortoise includes the Mojave and Sonoran deserts in California, Nevada, Arizona, Utah, and Sinaloa, Mexico. The Mojave population of the desert tortoise was listed as threatened on April 2, 1990. Critical habitat for the Mojave population was designated on February 8, 1994. Within the Mojave National Preserve tortoises utilize flats and bajadas characterized by scattered shrubs with inter-spaced herbaceous growth. Approximately 154 acres of designated desert tortoise Critical Habitat occur within the fire perimeter.

DIRECT FIRE EFFECTS: Direct effects of fire on desert tortoise can vary depending on fire intensity, vegetation, and location of tortoises at the time of the fire. There was approximately 154 acres of designated critical habitat, as well as +/- 200 acres of potentially suitable habitat within the fire area. Because so few acres of habitat were burned, it is thought that few desert tortoises occurred within the fire area. Due to their lack of mobility, desert tortoise within the fire area may

have been overcome by flames or asphyxiated. Desert tortoises inside deep burrows would have been more protected, however asphyxiation could still cause mortality.

INDIRECT FIRE EFFECTS: Indirect effects of fire may include a temporary loss of food plants, a shift in forage species, and a loss of perennial plants that provide thermal cover and protection from predators. Within the Hackberry fire areas, the fire burned at different intensities resulting in a matrix of affected vegetation ranging from unburned to high (>66%) vegetation mortality. Depending on their location, tortoises could make use of unburned or low mortality areas to meet their forage and cover needs. Any indirect effects resulting from the loss of vegetation will continue, though decreasing in intensity over time, as the plant community recovers. See the Vegetation Assessment for more details on post fire vegetation recovery.

DIRECT FIRE SUPPRESSION EFFECTS: Suppression activities could have resulted in crushing of tortoises and/or burrows, however no such incidents were reported and no bulldozers were used. Fire engines remained on roads except in one instance when 2 or 3 fire engines traveled off-road a short distance to avoid being over run by the fire. No fire handline was cut or fire retardant was dropped in any designated Critical Habitat or potentially suitable habitat. A burnout operation was conducted on the western edge of the fire adjacent to designated Critical Habitat. This operation was under 500 acres and initiated to protect designated Critical Habitat in the Cima Dome area of the Preserve. Any desert tortoises within this burnout area may have been overcome by flames or asphyxiation. The 500 acres included in the burnout contained +/- 200 acres considered to be potential desert tortoise habitat. No designated Critical Habitat was included in the burnout operation area. Note that suppression efforts followed recommendations outlined in the Biological Opinion of the Fire Management Plan to minimize impacts to desert tortoise and their designated Critical Habitats. Alicia Rabas, a BLM Wildlife Biologist trained in identification of desert tortoise burrows, surveyed the incident command post and helispot for desert tortoises and their burrows; none were detected.

INDIRECT FIRE SUPPRESSION EFFECTS: Indirect effects of the burnout operation include temporary loss of food plants, a shift in forage species, and a loss of perennial plants that provide thermal cover and protection from predators. Burnout operations typically result in lower fire intensities than wildfires, therefore the burnout area likely contains unburned areas interspersed with areas of low to moderate vegetation mortality.

POST FIRE OBSERVATIONS: Alicia Rabas, a BLM Wildlife Biologist, confirmed a report of a live desert tortoise within the burned area on June 26, 2005. Using a GPS coordinate taken by a suppression crew she was able to locate the tortoise in its burrow, photograph it, and recorded notes on the condition of the surrounding habitat. The tortoise was located on the outer perimeter of the Wildhorse Fire in an area where vegetation mortality was low. The area around the entrance of the burrow was blackened by the fire. Unconfirmed reports of two dead tortoises within the north end fire area were provided by suppression crews. Alicia attempted to locate both reported locations, however neither was found. Therefore it is unclear if the two mortalities were the result of the fire or other causes. Note that the reports of the dead tortoises were not located within the area of the backfire operations.

In addition to the surveys conducted for desert tortoise and their burrows around the Incident Command Post and the helispot on June 26, 2005, Alicia Rabas also conducted 2 to 3 miles of survey transects on the western edge of the fire. This survey included the area of the 500 acre burnout operation. No detections of desert tortoises or their burrows were made.

2. Other Species of Importance

The Mojave National Preserve staff requested an assessment of fire effects to populations of mule deer (*Odocoileus hemionus*) and Nelson's bighorn sheep (*Ovis canadensis nelsoni*) and their habitats. The following information is a summary of fire area reconnaissance and discussions with

MNP staff and Andy Pauli, Wildlife Biologist, California Department of Fish and Game. The fire occurred outside key areas utilized by the bighorn sheep population. However, the fire perimeter encompasses optimal mule deer habitat within the Preserve. It is thought that the fire caused temporary displacement to individual animals of both species. No carcasses were observed during fire suppression and post fire reconnaissance actions. Both species are very mobile and were probably able to flee from the approaching fire. Fire effects to the vegetation reduced some forage species temporarily. However, within the fire areas, the burn is patchy, and it is thought that forage and browse species are still available for both species. And, there will be long term benefits to both species as the vegetation returns. Young vegetation regenerating after the fire is very digestible and high in nitrogen. In addition, the reduction in shrub cover removes ambush sites predators (e.g. mountain lions) may use along game trails and adjacent to watering sites used by big horn sheep. Both mule deer and bighorn sheep were observed by BAER team members within the burned area on several occasions during post fire reconnaissance.

WILDLIFE HABITAT IMPROVEMENTS WITHIN THE FIRE AREA included 19 gallinaceous guzzlers and spring developments. No big game guzzlers occur within the fire perimeters. No assessment of fire effects to the guzzlers was conducted as a part of this BAER process. Spring development structures were assessed and documented in the Watershed BAER Assessment.

HACKBERRY FIRE COMPLEX SPECIES LIST

A species list was obtained from the U. S. Fish and Wildlife Service, Ventura Field Office, on June 28, 2005. The species list was reviewed by Debra Hughson, Science Advisor with Mojave National Preserve, on June 30, 2005 for accuracy, and to determine which species or Critical Habitats may occur within the fire area. The list was also reviewed on June 30, 2005, by Brian Croft, FWS Biologist, to finalize the species to address, discuss those that are not addressed, and why. The following federally listed species occur, or have habitat within the fire area, or were potentially affected by fire suppression actions:

SPECIES	SCIENTIFIC NAME	LISTING STATUS
Desert tortoise (Mojave population)	<i>Gopherus agassizii</i>	FT

The National Park Service policy direct management of State listed species as if they were federally listed. In accordance with policy, the following state and federally listed species were identified by NPS staff as potentially occurring within or near the Mojave National Preserve. Through post fire reconnaissance and consultation with local experts, it was determined that these species or their Critical Habitat were not affected by the fire (no habitat within or adjacent to the fire area and/or inventories prior to the fire determined absence), or expected to be affected by potential post-fire flooding.

SPECIES	SCIENTIFIC NAME	LISTING STATUS	REASON FOR NOT ADDRESSING SPECIES IN THIS REPORT
Southwestern willow flycatcher	<i>Empidonax trailii extimus</i>	FE	No habitat within fire area
Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE	No habitat within fire area
Mojave tui chub	<i>Gila bicolor mohavensis</i>	FE	No habitat within fire area
Swainson's hawk	<i>Buteo swainsoni</i>	ST	No habitat within fire area
Willow Flycatcher**	<i>Empidonax trailii</i>	SE	No habitat within fire area
Arizona Bell's vireo	<i>Vireo bellii arizonae</i>	SE	No habitat within fire area

FE = Federally Endangered

FT = Federally Threatened

SE = State Endangered

ST = State Threatened

**State listing includes all subspecies

IV. RECOMMENDATIONS

A. Fire Suppression Rehabilitation: none

B. Emergency Stabilization

1. **Management:** none
2. **Monitoring :** none

C. Rehabilitation

1. **Management** none
2. **Monitoring** none

D. Management Recommendations (non-specification related)

1. It was determined that individual desert tortoises and 154 acres of designated Critical Habitat may have been affected by the fires. Emergency stabilization efforts described in this BAER report are not expected to adversely effect the desert tortoise. Recommendations proposed in the BAER Vegetation Assessment, if implemented in a timely manner, will help to mitigate negative fire effects to desert tortoise. The determinations documented in this report should be reassessed, and consultation conducted as needed, if additional stabilization measures or vegetation management activities are proposed after June 29, 2005. If non-emergency vegetation management activities are proposed for long-term rehabilitation and restoration of the fire area, another Biological Assessment should be prepared.
2. Emergency consultation was completed on June 30, 2005. Mojave National Preserve staff should send a copy of the consultation documentation to the U. S. Fish and Wildlife Service, Ventura Field Office.
3. Loss of vegetation may lead to an increase in invasive species within burned areas (see BAER Vegetation Assessment). Invasive species may not provide desert tortoise with the nutrition and water they need to sustain them over extended periods (Oftedal 2005). Monitoring should be conducted to determine desert tortoise foraging patterns within burned areas and across the Preserve as a whole.
4. Post fire monitoring should be initiated to determine mule deer population abundance and distribution in and around the burned area. Changes in habitat use patterns in response to the fire should be documented and incorporated into long term habitat rehabilitation plans. This information will also aid resource managers in making harvest and adaptive management decisions.
5. Monitoring of the big horn sheep populations' use of burned areas should be conducted to document the long term habitat benefits of the fire. As annual grasses and forbs begin to regenerate, bighorn sheep use of these areas should be described. This data should be incorporated into California Department of Fish and Game's long term bighorn sheep data sets.
6. Damage to the pipes and storage basins of watering facilities associated with the springs and adits of the Hackberry Mountains should be assessed to determine the effects to the species of wildlife that utilize on them. If it is found that damage to the infrastructure causes loss of spring flows, restoration activities to return natural spring flows should be initiated at the Preserve's discretion.

DETERMINATIONS OF EFFECT TO THREATENED SPECIES

DESERT TORTOISE

FIRE EFFECTS: Within the small amount of desert tortoise habitat affected by the fire, some individuals may have perished as a result of the fire. Desert tortoise forage and cover plants have been temporarily removed in burned areas encompassing 154 acres of designated Critical Habitat and +/- 200 acres of potential desert tortoise habitat.

SUPPRESSION ACTION EFFECTS: The approximate 500 acres of the backfire operation included an estimated 200 acres of potential desert tortoise habitat. It is unlikely that desert tortoise were overcome by burnout operations. A biologist trained in the identification of desert tortoises and their burrows conducted surveys within the backfire area. No detections of tortoises or burrows were made. This operation also temporarily removed forage and cover plants which may effect desert tortoise.

PROPOSED EMERGENCY STABILIZATION ACTION EFFECTS: There were no suppression rehabilitation actions taken in desert tortoise habitat. Therefore, there was no effect to desert tortoise or their designated Critical Habitat. Except for one specification, all emergency stabilization treatments will be implemented outside of desert tortoise habitat. Resource protection fences that were damaged by the fire will be replaced to exclude cattle from the burned area. This proposed treatment has been designed to have no effect on desert tortoise. A biologist trained in the recognition of tortoise burrows will be present during design and construction to prevent damage to burrows.

SUPPRESSION AND EMERGENCY STABILIZATION MEASURES (detailed information documented in Specifications, Part F)

SUPPRESSION REHABILITATION ACTIONS
Rake and repair handline using hand crews
Repair cup trench in Hackberry Mountains
Repair tire ruts and rake tire tracks

BURN AREA EMERGENCY STABILIZATION TREATMENTS
Known cultural site assessment
Cultural site stabilization
Increase law enforcement controls
Burro removal
Tree hazard mitigation
Post flood event road cleanup
Replace public safety signs
Monitor state listed plant species
Exclusion fences
Abandon road closures
Plan preparation
Implementation leader
Assess abandoned mine hazards

V. CONSULTATIONS

NAME, AGENCY, TITLE	TELEPHONE
Matthew Brooks, USGS, Research Botanist, Henderson, NV	702-564-4615
Brian Croft, FWS, Biologist, Ventura, CA	805-644-1766
Curt Deuser, NPS, Supervisory Restoration Biologist, Boulder City, NV	702-293-8979
Sandee Dingman, NPS, Biologist, Mojave National Preserve	760-252-6146
Debra Hughson, NPS, Science Advisor, Mojave National Preserve	760-252-6105
Anne Kearns, NPS, Hydrologist, Mojave National Preserve	760-252-6144
Andy Pauli, CA DFG, Wildlife Biologist, San Bernadino County, CA	760-240-1372
Alicia Rabas, BLM, Wildlife Biologist, Needles, CA	760-326-7060
Larry Whalon, NPS, Chief of Resources Management, Mojave National Preserve	760-252-6140

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VII. ATTACHMENTS

- U. S. FWS Species list dated June 28, 2005 for the Hackberry Complex at Mojave National Preserve, in San Bernadino County, California.
- Fire perimeter and desert tortoise designated Critical Habitat Map
- Emergency consultation documentation on file at the Mojave National Preserve office.

Kenneth Griggs, USFWS, San Luis NWR Complex, 209-826-3508
Karen Hayden, USDA Forest Service, Plumas National Forest, 530-532-7410

BURNED AREA EMERGENCY STABILIZATION PLAN

HACKBERRY COMPLEX

CULTURAL RESOURCE ASSESSMENT

I. OBJECTIVES

Assess damages to known historic and prehistoric cultural resources as the result of fire behavior.

Assess potential risks to known/documented cultural resources as the result of the fire (e.g. erosion, flooding, and exposure to looting and/or vandalism).

Assess potential risks to known cultural resources as the result of emergency stabilization activities.

Coordinate with Federally recognized Tribes.

II. ISSUES

- Identify known/documented resources that have been subject to direct or indirect effects of fire.
- Identify emergency stabilization and/or protection needs for cultural resources within the fire.
- Other resources stabilization measures that may put cultural resources at risk.
- Consultation with appropriate parties to meet legal compliance and tribal consultation.

III. OBSERVATIONS

A. Background

Prehistoric Resources

This portion of the east Mojave Desert is often referred to as the lonesome triangle from a research aspect. Very little research or fieldwork has been conducted in the area. Archaeological documentation of sites within the fire perimeters has increased since the mid-1990s, but lack of roads, steep terrain and harsh climatic conditions continues to limit research in the area. Christensen et al and Nichols have conducted the majority of research in the vicinity of the fires. Access to water and other important resources are directly correlated to site locations. "Human activity is directly affected by climate. In a xeric landscape, water means life...the Mojave Desert which is dominated by an orographic rain shadow caused by the high western ranges such as the Tehachapi Mountains and the Sierra Nevada. This gives rise to minimal precipitation, low humidity, strong seasonal winds, and a wide diurnal temperature range." (Christensen et al. 2001:3)

Nichols (2004:17-19) provides a good summary of the cultural sequence of the area:

"The Paleo-Indian period (12,000 to 10,000 BP) is associated with pluvial lakeshores and is artifactually represented by "Clovis style" fluted projectile points found as isolates....This period is very poorly represented in the East Mojave.

The Lake Mojave period, which followed, is also considered by most archaeologists to be Paleo-Indian...The Lake Mojave period (10,000 to 7,000 BP) was characterized by widespread generalized hunting adaptation before the end of the pluvial lake desiccation. Hunting adaptation was marked by increased

mobility of groups, ranging more widely across resource areas for subsistence. Milling implements for plant processing are evident for this period but minimal.

The Pinto period (7,000 to 4,000 BP) was “characterized by major cultural adjustments influenced by the change in environmental conditions” changing the residential focus to springs and seeps...A persistence of small family units in a highly mobile foraging strategy marked this period with an expanding utilization of milling for hard seed processing.

The Gypsum period (4,000 to 1,500 BP) “was characterized by a continuing importance placed upon hunting with a greater increased reliance place on hard seeds as indicated by the commonality of milling stones and handstones associated with this period.” A moister climate is suggested, supporting an increase in population, number of short-term occupation sites established by foraging activities, and “increasing contact with the California coast and the Southwest.

The Saratoga Springs period (1,500 to 1,000 BP) was characterized by introduced technologies and regional diversification reflected in the number and variety of artifacts from eastern cultures. The subsistence strategy is the same as that of the Gypsum period “with the addition of increased utilization of the upland areas for pine nuts and the introduction of the bow and arrow” as evident in projectile point typologies for this period. This period is also marked by the presumed “beginnings of the Numic expansion eastward across the Mojave.”

The Shoshonean or Late Prehistoric/Proto Historic period (1,000 BP to historic contact) is characterized by the appearance of crude brownware pottery and Desert Side-Notched projectile points. Subsistence culture strategy is similar to that of the Saratoga Springs period but with usage of “a number of short-term residential base camps to monitor a wide range of lower ranked resources. Overall site occurrences decline during this period due to an increase in arid conditions evidenced by “diminished spring discharge, the absence of any high stands of desert lakes, and the presence of more xeric plants at higher elevations.” Ceramics at this point are cultural indicators and the Patayan/ancestral Mojave are represented by “paddle-and-anvil constructed Lower Colorado River Buffware and Tizon Brown” while the Chemehuevi are represented by a “poorly defined brownware.” The Patayan or ancestral Mojave are the group presumed to have inhabited the region before the Numic Chemehuevi (Southern Paiute) moved into the area.”

The Preserve has 335 documented prehistoric sites within the perimeter of the fires (see Table 1). These include habitation sites, which contain midden deposits, groundstone tools and various chipped stone tools and debitage. Quarry sites are found within the fire perimeter and are source site areas for a variety of materials used for the manufacture of tools. Lithic scatters are small to large concentrations of debitage and formed tools; some of these sites may contain other cultural material. Rock shelters can contain a variety of materials including midden deposits, lithic scatters and rock art. Rock cairns, rock alignments, rock rings and bedrock mortars are single component sites with an absence of other cultural materials. Food processing sites consist of metates used for the processing of hard seeds or other resources.

Rock art sites consist of petroglyphs or pictographs or combinations of both. Of the 33 rock art sites 20 contain no other cultural resources and 13 are associated with other site types. Researchers at the Sweeney Granite Mountain Desert Research Center have spent a considerable amount of time recording rock art sites within the fire perimeters while not formulating interpretations of what rock art elements represent. Christensen et al. (2001:60) observed that “The East Mojave has a plethora of rock art sites, particularly petroglyphs, but their distribution and density are anything but uniform. The sheer volume of rock art images is indicative that some areas were viewed as a source of power and

supernatural significance. The ideological implications of this fact are interesting since they go beyond the processual insights of subsistence and settlement patterns.” Of the 335 documented prehistoric sites found within the fire perimeters 91 habitation sites, 33 rock art sites and 5 rock shelters have resources that could have sustained impacts from fire or have the potential for post fire impacts. These 129 sites will be assessed for fire effects damage, the need for stabilization, the risk of looting, and damage from feral burros. Midden deposits at habitation and rock shelter sites are vulnerable to rilling and other forms of erosion. Many habitation sites are associated with water resources, especially springs, and are vulnerable to wallowing of burros and the creation of deep burro trails through deposits. Rock art sites can sustain soot blackening or if executed on granite or basalt can experience spalling from direct contact with flames or intense heating. Soot blackening may be removed under some circumstances, but spalling can irreparably destroy rock art elements. Emergency collection of vulnerable artifacts may be necessary at some of these sites. The Preserve has a curation facility at its main office and collected artifacts will be processed and stored at this facility.

Table 1 – Site Types within the Fire Perimeters

Site Type	Number Prehistoric	Number Historic
Mines		4
Mineral Milling		3
Ranch		10
Transportation		2
Habitation Sites	91	5
Rock Art Sites*	33	
Quarry	6	
Lithic Scatter	176	
Rock Shelter	5	
Rock Cairn	5	
Rock Alignments	1	
Food Processing	3	
Bedrock Mortars	1	
Rock Ring	2	
Total	348	24

* Rock art sites may be co-located with other site types, however this site type requires a specific damage assessment technique and has been singled out as a separate site type for this plan, thus increasing the overall number of prehistoric sites from 335 to 348 within the fire perimeters.

Historic Resources

The Mojave Road trends east west through the Providence Mountains within the fire perimeter and was used as a corridor to cross the desert between the Colorado River and the coast. The route of the road was originally used by Native Americans, and later by Spanish and American explorers. When conflicts between Native Americans and Euro-American travels escalated the US Military established several outposts along the road as protection. Government Holes (apparently unscathed by the fire) and Camp Rock Spring, both located within the fire, were two of these outposts. Today portions of the Mojave Road have been incorporated into roads running through the Preserve.

The first mining in the East Mojave began in 1863 in the Providence Mountains/Mid Hills/New York Mountains region also known as the Rock Springs Mining District. Mining declined several years later after conflicts with Native Americans increased. Milling of ore required long trips to San Francisco and isolation took its toll (King et al. 1981:304). Construction of a mill in the area in the 1870s improved prospects for miners, but mining

continued on a small scale and was not very productive. When the Santa Fe Railroad was constructed through the East Mojave Desert in the 1880s profitable mining began in the area. The period from 1900 to 1919 was the heyday of mining in the area, but the mining declined after World War I. Mines in the area extracted copper, lead, silver, gold, chromium, manganese, tungsten, and vanadium. Over 18,000 claims and 8,000 mines are present within Mojave National Preserve.

Sonoma State University is in the process of preparing a Mining Resource Overview for the Preserve. A considerable portion of the overview will include field documentation of historic resources associated with mining activity. Structures within the Preserve associated with mining activities include shafts, adits, mills, cabins, arrastra, and debris dumps.

Miners in the Rock Springs Mining District introduced cattle and horses into the area in the 1860s (King et al. 1981:317). Military records show that a small herd was maintained at Camp Rock Spring (King et al. 1981:318). As mining increased in the area, livestock use increased. In 1894 the Rock Springs Land and Cattle Company was incorporated and had operations over a considerable portion of the Preserve. The ranch constructed corrals, improved springs, installed pipelines, placed troughs and tanks downstream from springs, constructed fences, and claimed water rights to most of the springs within the preserve.

The National Park Service prepared a Cultural Landscapes Inventory in 2004 for the Rock Springs Land and Cattle Company. This was followed by a National Register Historic District Nomination submitted in June 2005. "The ranch is locally significant under Criterion A for its contributions to the cattle economy of the East Mojave Desert and under Criterion C as it retains a remarkably intact system of vernacular buildings, structures and landscape features that continue to represent the historic configuration and structural development of one of the largest cattle operations in Southern California from the late nineteenth to mid-twentieth centuries. The period of significance for the Rock Springs Land and Cattle Company Historic District is 1894 to 1946" (NPS 2004).

There are 24 documented historic sites within the fire perimeters (see Table 1 above). The Mojave Road and an additional unnamed transportation route run through the fire area. Both have been modified considerably since Euro-Americans entered the area. These resources were not impacted by the fires and therefore will not be revisited for fire effects. Twenty-two historic sites will be revisited to determine impacts from the fires.

Four mines within the fire perimeters have been assigned trinomials by the California Information Center at the San Bernardino County Museum, however 111 mine sites have been documented to some extent by the Preserve Geologist. A mine safety specialist and Archaeologist Nichols will visit 27 of these mine sites to ascertain safety needs and Section 106 concerns if closures are necessary (see the Assess Abandoned Mine Hazards Specification). Site forms will be updated as needed. Three milling sites associated with mining are within the fire perimeters and will be visited to ascertain site conditions.

Ranching sites within the fire perimeters associated with the Rock Springs Land and Cattle Company Nominated Historic District include spring developments, structures, corrals and debris dumps. Ten sites associated with ranching are found within the fire perimeters, nine of these are located at water.

One homestead site recently received Vanishing Treasures funds for restoration of the house. The site contains debris dumps, abandoned automobiles, corrals, a mineshaft and adit, a house with a cold cellar, and fence lines. Vanishing Treasures funds are allocated through a competitive process. "The architectural resources involved represent a significant aspect of the nation's heritage, some are World Heritage sites, and all hold immense meaning for a number of traditional communities" (NPS 2003:1). Four other historic habitation sites have been documented within the fire perimeters.

B. Reconnaissance Methodology and Results

Archaeologists Dan Hall and Carla Burnside attended an orientation meeting on June 27 at the Hole in the Wall Fire Center on the Preserve. Law enforcement staff stressed the risk to cultural resources from looting as an important issue to consider. A helicopter flight with Preserve Field Archaeologist Dave Nichols, who served as a Resource Advisor during the fires, took place later in the day. The overflight allowed views of mining resources in remote areas within the fire. Observations include: total loss of wood construction resources at various locations, exposure of undocumented mineshafts and adits in various locations, and several undocumented wood structures were spared by the fire.

Archaeologists spent June 28 and June 29 visiting five historic and four prehistoric sites within the Hackberry Complex. Time constraints imposed for preparation of the Emergency Stabilization plan limited field time to these few sites. Five prehistoric sites were visited to determine impacts from the fire and potential post-fire impacts to middens and features. Rock art at these sites was examined to assess impacts of the fire. Historic sites visited include a homestead and four spring sites. These sites contained spring improvements, debris dumps, and in some cases historic structures. A handline on the west side of the Hackberry Fire was examined prior to rehabilitation by suppression crews.

C. Findings

Prehistoric Sites

The sleeping circle site was examined and concerns about erosion on the upper portion of the site and the potential for the introduction of ash and charcoal into cultural deposits were discussed. A stabilization strategy to prevent further degradation of the site was formulated by the Watershed group during a subsequent visit and a specification is included in this plan. Removal of feral burros within the fire perimeters will significantly reduce damage to sites located near springs. Burros have a propensity to wallow near water sources and form extensive trail systems across unvegetated expanses. Emergency collection of diagnostic artifacts from the surface of the site may be necessary if road closures into the area are not effective.

Inspection of a prominent rock art site showed that vegetative cover had been removed across the entire extent of the site exposing cultural material on the surface of the site making these more vulnerable to illegal collection; additional features were found in the draw near a rockshelter; increased rodent activity was evident in midden deposits; and minimal damage to the rock art elements was noted. Emergency collection of diagnostic artifacts may be necessary as road closures are not possible in the area. An intensive examination of all rock art elements is necessary to determine impacts from the fire. If impacts are discovered removal of soot may be possible using specialized techniques.

A rock art site on the northeast side of the fire contains numerous pictograph panels widely distributed across granite boulders. Midden deposits occur interspersed amongst the boulders. Damage from soot was observed on several panels and spalling was prevalent across the site. This site will be included in the Known Cultural Site Assessment Specification so that damage to the rock art panels can be extensively ascertained.

Two other prehistoric sites examined by the team had all vegetative cover removed and additional features and artifacts were exposed. Emergency collection of artifacts may be necessary after more formal evaluation of the site.

Historic Sites

The homestead site sustained extensive damage when the fire went through the area. The house scheduled for restoration with Vanishing Treasure Funds was destroyed and only foundation stones and debris remain. The roof of the cold storage cellar burned, however the concrete walls remain standing. An adit and a mineshaft were exposed after removal of vegetative cover and additional debris dumps were discovered scattered across the site. Due to the closeness of the site to a well-traveled road emergency collection of diagnostic historic artifacts will be necessary. Preserve law enforcement staff will increase patrols in the area and the Preserve will approach an adjacent private landowner about placing a gate along the public road to limit access to the site.

The remaining four historic sites, all contributing elements of the Rock Spring Land and Cattle Company National Historic District, suffered various impacts. All four were burned over and wooden features were lost in the fire. Portions of the wood corrals or entire corrals burned, debris dumps were exposed at all four sites, and additional features were exposed at all sites. All four sites require additional investigation. Emergency collection of diagnostic historic artifacts is necessary at all four sites, and road closures will deter looting. Removal of feral burros within the fire perimeters will eliminate damage to sites located near springs. Burros have a propensity to wallow near water sources and form extensive trail systems across unvegetated expanses.

Additional Risks

Impacts to cultural resources by the public have long been recognized by land management agencies in the California Desert. A 1980 report published by the BLM (Lyneis et al. 1980) compiled data collected from agencies concerning impacts to cultural resources. Four impacts discussed in this document have a high probability of occurring at historic and prehistoric sites within the fire perimeters. The first impact is surface collection of artifacts, which reduces "archaeologists' capacity for placing these sites in their proper chronological period" (Lyneis et al 1980:8). The second impact is pothunting, which is the uncontrolled digging for prehistoric and historic artifacts for "personal gain" (ibid.). Rockhounds can also cause a considerable amount of destruction at quarry sites that served as workshops for the manufacture of stone tools. "They are attracted to the same cherts and jaspers that attracted the Indian populations of the desert, but may not recognize the signs of prehistoric workmanship" (Lyneis et al 1980:13). The final impact described in the report is damage to cultural resources by off-road-vehicles (ORV). "Direct damage occurred to many surface sites which were driven over by ORV's. Much of this happened without the recreationist being aware of the damage...In addition to these effects from recreational use of ORVs, the widespread availability of them as transportation has enabled collectors and pothunters to reach areas of the desert that had previously been of limited access" (Lyneis et al. 1980:14).

Preserve law enforcement staff report that there were seven Archaeological Resource Protection Act cases on the Preserve in 2004. As was noted above the fire removed concealing vegetation at 348 prehistoric and 24 historic sites, making them more vulnerable to illegal collection and looting. Increased law enforcement patrols and enforcement of road closures will limit these impacts to prehistoric and historic sites at risk within the fire perimeters.

IV. RECOMMENDATIONS

A. Emergency Stabilization – Fire Suppression Repair

Fire suppression activities did not impact prehistoric or historic sites.

B. Emergency Stabilization

#1 - Known Cultural Site Assessment

This treatment will entail the assessment of known National Register of Historic Places (National Register) eligible or potentially eligible prehistoric and historic archaeological sites for post-fire damage and potential risks from erosion, looting, or vandalism. This treatment may also provide for the emergency collection of artifacts on those easily accessible sites that are deemed to be highly susceptible to looting. Assessments will occur at 91 habitation sites, 33 rock art sites, 5 rock shelters, and 22 historic sites within the burn area. This assessment will also assess any damages these resources may have sustained during the fire.

#2 - Cultural Site Stabilization

A large habitation site within the Hackberry Fire will have straw wattles installed upslope to divert charred wood and ash laden runoff away from four “sleeping circles”. These sensitive archaeological features represent the floors (living surfaces) of brush constructed shelters. The location of archaeological sites are exempt from public disclosure under the Archaeological Resources Protection Act of 1979 (ARPA), and the Freedom of Information Act (FOIA).

#3 - Increased Law Enforcement Patrol

Looting and vandalism of prehistoric and historic resources are known to occur within Mojave National Preserve. Reduced ground cover as the result of fire effects has exposed cultural resource sites to increased risk from such activities. These risks can be minimized through law enforcement patrols at selected sites and the enforcement of area closures. Law enforcement officers shall have authority to take action on artifact collectors, looters, and off-road-vehicle violators. Over 372 prehistoric and historic sites within the fire perimeters will be protected, as will other resources.

#4 - Burro Removal

Feral burros within the vicinity of the fire will be rounded up and removed from the park using a helicopter. This treatment will occur within the Hackberry Fire Complex and in areas adjacent to the complex if indicators exist that these animals are trailing in and out of the burn. Special attention will be given to areas around springs or c-developed wells, and other such locations where burros are known to congregate. Burro activity, particularly around springs, poses a risk to the integrity of archaeological sites.

C. Rehabilitation

If monitoring of vegetative regrowth shows that recovery is not sufficient to camouflage exposed artifacts at prehistoric and historic sites an increased law enforcement presence should continue in these areas and road closures should remain in effect.

If burros continue to congregate in the vicinity of prehistoric and historic sites within the burn area additional burro removals should occur.

D. Management Recommendations – Non-Specification Related

Wildland fire has the potential to adversely affect cultural resources, however it also offers the opportunity to perform inventories in areas that were previously inaccessible and in areas where fire has effectively removed ground cover that was obscuring sites. Funding for these suggested activities should come from the Preserve's operating program or other funding sources. Given these conditions, the following non-specification recommendations are offered:

A systematic and comprehensive cultural resources inventory and site documentation in areas of high site probability should be carried out within the burn area.

Inventory and documentation of historic mineshafts and adits exposed by removal of ground obscuring vegetation.

Preventative measures at rock art sites should include removal of vegetation in the immediate vicinity of rock art panels throughout the Mojave National Preserve to eliminate potential spalling and soot accumulation in the event of future wildfires.

IV. CONSULTATIONS

SHPO - Archaeologist Dan Hall initiated contact with the California State Historic Preservation Office (SHPO) via telephone on June 29 to relay fire effects to cultural resources and to assure them that Section 106 NHPA procedures would be followed for any treatments that may effect cultural resources.

Tribal Entities - Archaeologist Dan Nichols initiated contact with cultural resource staff for the Chemehuevi and Mojave Tribes. Tribal staff were assured that if they had any concerns they could contact cultural resource staff at the Preserve.

Rock Art Specialist - David Lee, Sweeney Granite Mountains Desert Research Center, University of California-Natural Reserve System, Kelso, California.

VI. REFERENCES

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Lyneis, Margaret M., David L. Weide, and Elizabeth vonTill Warren

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Nichols, David

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Carla D. Burnside, US Fish and Wildlife Service, Malheur National Wildlife Refuge, (541) 493-2612

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BURNED AREA EMERGENCY STABILIZATION PLAN

HACKBERRY COMPLEX

VEGETATION RESOURCE ASSESSMENT

I. OBJECTIVES

- Evaluate and assess fire impacts to vegetative resources, including State listed plant species
- Determine emergency stabilization and monitoring needs supported by specifications to aid in vegetative recovery and soil stabilization efforts
- Evaluate potential for invasive plant species encroachment into native plant communities and potential impacts to state listed plants and critical habitat for the federally threatened desert tortoise
- Provide management recommendations to assist in vegetative recovery and species habitat protection and rehabilitation

II. ISSUES

- Potential natural and cultural resource damage resulting from visitor use of closed areas
- Non-native invasive plant species establishment and expansion
- State listed plant species may have been affected by the fire
- Livestock pressure may impact native plant recovery
- Impacts to the National Register's tallest known Mojave yucca
- Natural regeneration of pinon pine and juniper

III. OBSERVATIONS

This report identifies and addresses known and potential impacts to vegetation resources within the Hackberry Fire Complex in the Mojave National Preserve (MNP). Vegetation resources, for this assessment, will be defined as plant communities, individual plant species, and State listed plant species.

Findings and recommendations contained within this assessment are based upon information obtained from personal interviews with MNP staff, the University of California Sweeney Granite Mountain Desert Research Center, the California State University Desert Studies Center, literature reviews, and field reconnaissance of the fire area. Reconnaissance of impacted areas was conducted using ground and aerial survey methods along with satellite imagery and spatial data provided during the preparation of this plan.

This assessment will attempt to capture the concerns and issues expressed by the MNP staff, local university research stations, and local residents for the future management of the lands in and near the fire. It will detail the known damage to the vegetation resource and will outline expected post-fire response and recovery of the vegetation; will discuss revegetation needs and non-native invasive species encroachment; and outline management considerations for recovery of the vegetation resources. Additionally, fire effects to State listed plant species will be discussed from the fire as well as proposed rehabilitation measures.

A. Background

During the winter of 2004-2005, the Mojave National Preserve experienced record levels of precipitation. Over 21 inches were recorded at Mitchell Caverns during this winter period; average annual precipitation in this area is between 5 and 10 inches. As a result, herbaceous annuals and grasses were extremely productive, forming a dense coverage of fine fuels. High temperatures, winds gusting at 10-20 mph, low relative humidities, and very low live fuel moistures resulted in a fast moving fire with rapid rates of spread across a variety of plant communities. The Hackberry Complex is comprised of two contiguous burned areas, the Hackberry Fire and the Wildhorse Fire. Vegetation within these two fire perimeters was comprised of ten different plant communities, mostly comprised of juniper, Joshua tree, Mojave yucca, and pinon types (Thomas et. al. 2004).

Resource concerns expressed by MNP for vegetation resources include native vegetation loss, short and long-term impacts to State listed plant species, the potential for spread of non-native invasive species, and the potential for increased resource disturbance as a result of loss of recovering vegetation on and around abandoned roads and washes. Resource management direction was obtained from the *Mojave National Preserve Management Plan* (2002) and *Draft Mojave National Preserve Fire Management Plan* (2005).

The burn area occurs in portions of two active grazing allotments, Colton Hills and Gold Valley (no livestock grazing occurs within the smaller Hackberry Fire area). Gold Valley is primarily summer range, Colton Hills is primarily winter range. Permitted livestock use in these allotments totals 2,880 animal unit months (AUM) for Colton Hills, and 1,152 AUMs for Gold Valley. Over 20 miles of boundary and pasture fence occurs within the burn area, in varying conditions. Most fence consists primarily of metal posts, but a significant amount of older, wooden post fence exists, particularly along the allotment boundary. Numerous water developments for livestock also exist within the burn area, and are maintained by the permittee (Larry Whalon, personal communication).

Livestock use within these allotments is determined by the Terms and Conditions of Special Use Permit for Grazing (October 21, 1995). The Terms and Conditions of Special Use Permit for Grazing (October 21, 1995) lists the responsibilities of the government and permittee for maintenance and removal of range improvements. The permit Terms and Conditions provides for partial or total suspension of grazing due to fire or other catastrophes, after a 60 day notice is provided. The Terms and Conditions also specifies the manner in which range improvements must be installed and maintained, and the process for negotiating the responsibilities for these improvements. Other documents which provide direction for livestock management include the Mojave National Preserve (MNP) General Management Plan, Draft Livestock Management Plan for the Mojave National Preserve (July 29, 2004), Gold Valley and Colton Hills Allotment Management Plans, and Draft Landscape Inventory and Assessment 7IL Ranch (March 31, 2005). The Draft Livestock Management Plan for the Mojave National Preserve (July 29, 2004) provides locations and standards for fencing on Preserve lands.

The MNP General Management Plan emphasizes perpetuation of native plant life as critical components of natural desert ecosystems. The rate and success of reestablishment of native plants within the burn will largely depend upon management of domestic animal use within the allotments. Range deferment is commonly applied to burn areas to promote stabilization of native plants communities, and is required where seeding or other treatments are applied for this purpose (Interagency Burned Area Emergency Response Handbook). MNP expressed concern about impacts to the tallest known Mojave yucca (*Yucca schidigera*), located in the Hole in the Wall area along a tributary drainage to Wild Horse Canyon. It is listed on the National Register of Big Trees by American Forests.

B. Reconnaissance Methodology and Results

An initial briefing was conducted with MNP Superintendent and Natural Resource staff on Monday, June 27, 2005. Additionally, MNP staff interacted with the Burned Area Emergency Response (BAER) team at daily briefings and in various individual and small group discussions. Through these contacts the above-listed vegetation-related issues were relayed to the BAER team.

The MNP works closely with two academic research stations located within the Preserve: the University of California Riverside Sweeney Granite Mountains Desert Research Center (SGMDRC) and the California State University Fullerton Desert Studies Center (DSC). Both stations are directed by desert ecologists very familiar with the vegetation of MNP, and efforts were made to contact these individuals. On June 28, Robert Fulton (DSC) met with BAER staff and provided information on expected fire effects, general ecology of the burned area, and photomonitoring plots inside the burn perimeter. On June 28 and June 29, BAER Vegetation Specialist Jane Rodgers met with Jim André (SGMDRC) and gathered information on State listed plant species.

Non-native plant species work in the Preserve is provided by the Lake Mead NRA Exotic Plant Management Team (EPMT). EPMT Leader Curt Deuser and USGS Plant Ecologist Matt Brooks met with BAER staff to provide input on potential invasive species issues related to this fire. Both individuals were interviewed, and Mr. Deuser later provided written recommendations.

Resource Advisor Sandee Dingman provided copies of the Draft Fire Management Plan for MNP, as well as a draft chapter for Fire Ecology of California: Fire Ecology of the Desert Bioregion (Brooks and Minnich. *In Press*). These documents were reviewed for vegetation information.

The BAER team Operations and Vegetation specialists conducted field reconnaissance of fire effects on vegetation resources. Reconnaissance methods consisted of helicopter fly over, roadside surveys, and personal interviews regarding rare plant locations, potential invasive weed locations, sites representative of various plant communities, and resource protection issues associated with abandoned roads throughout the burn. Mid Hills Campground was surveyed for fire effects to woodland trees within and adjacent to roads, campsites, and other developed recreation facilities. Likewise, the Seven Mile Trail was traversed to evaluate effects on woodland trees. The 2002 Wild Horse Burn was visited to assess post fire vegetation response. BAER team members also visited the registered yucca tree to evaluate potential fire damage.

BAER Team members conducted an extensive survey of existing fence lines and natural barriers for potential use for livestock exclusion. The livestock permittee was contacted to determine the location and conditions of fencing needed to manage livestock after the burn. He expressed concern about the threat posed by down barbed wire to livestock. He had checked several existing water developments and expressed no concern about the remaining ones (Rob Blair, personal communication). The MNP staff expressed the need to exclude livestock from as much of the burned area as possible (Larry Whalon, Sandee Dingman, personal communications). The U.S. Fish and Wildlife Service, during formal consultation with the BAER team Wildlife Biologist, agreed to mitigations to avoid unacceptable impacts to desert tortoise during fence construction in suitable habitat (Karen Hayden, personal communication).

In order to address concerns with off-road vehicle use in wilderness and outside of designated routes, field reconnaissance was conducted with Park Ranger Tim Duncan. Ranger Duncan provided information both in the field and at the Hole in the Wall Fire Center regarding locations of abandoned roads and washes that would be effected by these fires. Site visits focused on examining the loss of vegetation along open roadways that exposed old abandoned roads and washes. Loss of vegetation to these areas increases visibility and has the potential to increase illegal use of these sites by motorized traffic.

C. Findings

Vegetation

Mojave National Preserve is a floristically diverse area, with over 900 species of vascular plants; vegetation effected by the Hackberry Complex likely included many of these species. Likewise, these fires burned across ten vegetation types (Thomas et. al. 2004), beginning with lower elevation washes and creosote and moving up into the higher elevations through extensive juniper and pinon stands. Elevations vary from 3600 to 6600 feet. While there were many communities within the fire boundary, the majority of the burned acreage was dominated by juniper, Joshua tree, Mojave yucca and Pinon (See Vegetation Mortality Map and Pre-Fire Vegetation Map). When compared to the remaining vegetation within the Preserve, the Hackberry Complex had a significant effect on the juniper, big sagebrush, and high elevation wash system types (see Table 1). No Federally listed threatened or endangered species occur within this fire area. Vegetation types are grouped into zones (NPS 2005) and discussed in greater detail below.

Table 1. Vegetation types within the Hackberry Complex

Hackberry Complex		Acreage	% of Total Burned	% of Total in Preserve
Wildhorse Fire	Vegetation Alliance	63,755		
	Juniper	32,405	50.8%	56%
	Joshua Tree	10,533	16.5%	3%
	Mojave Yucca	9,659	15.2%	4%
	Pinon	4,694	7.4%	12%
	Creosote	2,382	3.7%	0%
	Big Sagebrush	1,723	2.7%	41%
	Blackbrush	1,416	2.2%	5%
	Mid Elevation Wash System	550	0.9%	2%
	High Elevation Wash System	340	0.5%	32%
	Creosote-Brittlebush	51	0.1%	0%
	(Rural Development)	2	0.0%	0%
Hackberry Fire		7,157		
	Mojave Yucca	5,798	81.0%	2%
	Blackbrush	535	7.5%	2%
	Pinon	347	4.8%	1%
	Mid Elevation Wash System	176	2.5%	1%
	Joshua Tree	167	2.3%	0%
	Juniper	134	1.9%	0%
Total		70,912		

High Elevation Desert Shrubland and Woodland Zone

Woodland forests dominated by pinon pine (*Pinus monophylla*) and juniper (*Juniperus spp.*) occur throughout the fire area, particularly in drainages and on north aspects in the higher elevation areas.

Juniper

This wooded shrubland alliance is defined as $\geq 1\%$ *Juniperus spp.*, usually forming a band between pinon pine, sagebrush, and antelope brush, or other high shrublands. Species diversity

is often high. The Wildhorse portion of this fire resulted in the potential loss of over 50% of this type within the Preserve. California juniper is usually killed by fire; it has been observed that it can take years before seedlings will reestablish on the site (FEIS 2004).

Pinon

This sparsely wooded shrubland alliance is defined as $\geq 1\%$ *Pinus monophylla* as an emergent tree cover over a shrub canopy. At the time of the fire, trees had an abundant crop of immature cones; this seed crop has been lost to the fire, and future seed will come from small islands of unburned trees. Providing cone crops are produced, the largest challenge to natural regeneration of these stands is rodent predation and seedling trampling in high-use recreation areas. Based on the vegetation map, 7.4% of this complex burned through pinon, representing 12% of the pinon found in MNP. These woodland trees are a particularly important resource in the Mid Hills Campground area because of the shading and unique aesthetic qualities they offer.

Big Sagebrush

This shrubland alliance is dominated by *Artemisia tridentata*; *Ericameria nauseosa*, *Chrysothamnus viscidiflorus*, *Ephedra viridis*, *Purshia tridentata*, and *Tetradymia canescens* may be present. Dense stands of sagebrush characterize Round Valley (NPS 2005), and are considered to be unique within the Preserve (André 2005). While this type represents only 2.7% of this burn, this may effect up to 40% of the big sagebrush found in the Preserve. It was noted through field reconnaissance that many areas appear to have unburned islands of sagebrush worthy of further investigation. These islands should serve as seed sources for this wind dispersed species.

Middle Elevation Desert Shrubland and Grassland Zone

This zone is the most common to the park, and includes the Joshua tree woodlands, Mojave yucca desert scrub-steppe, and blackbrush shrublands. As stated in the MNP Draft FMP, this zone can have a high production of native herbs and grasses, creating a significant fine fuel load.

Joshua Tree and Mojave Yucca

Over 10,000 acres of this fire burned through Joshua trees, representing 16.5% of the fire and 3% of the Joshua tree types in the Preserve. At lower elevations, 15,000 acres of Mojave yucca were burned or approximately 6% of the Mojave yucca in the Preserve. While these two yucca species readily resprout after fire, the Joshua tree resprouts are often eaten by herbivores or otherwise die soon after burning. Post-fire recruitment of new Joshua trees is infrequent and depends upon years of high rainfall; less than 10 trees per acre have been observed on burns greater than 40 years old in Joshua Tree National Park (Brooks and Minnich *In Press*). It is expected that Mojave yuccas will readily resprout after this fire, and that sprouts will survive to maturity. This has been observed at an 2002 600-acre burn site within the Hackberry Complex (Fulton 2005). Joshua trees may take considerable time to recover, and may rely upon the reestablishment of shrub species to act as nurse plants.

Blackbrush

Blackbrush is one of the more flammable native shrubs in the Preserve due to high proportions of fine fuels and optimal packing ratio of shrubs. Depending upon the site conditions and annual precipitation events, Blackbrush may not recover for 75 years or more (Brooks and Minnich. *In Press*). Recovery will be dependent upon nearby unburned plants to provide seeds; seeds are typically cached by rodents and germinate under ideal weather conditions. Only a small portion of the entire MNP Blackbrush type was effected by this fire.

Other Vegetation Types

The remaining vegetation types comprise a small portion of the Hackberry Complex. Creosote, Creosote-Brittlebrush, and Mid and High Elevation Wash types cover less than 5% of burned area.

State Listed Plant Species

The MNP draft FMP provided valuable information on State listed plant species. Mojave National Preserve is a refuge for 103 species of rare plants as described by the State of California in conjunction with the California Native Plant Society (CNPS). After extensive interviews with Jim André, it was discovered that up to 38 State and CNPS listed species may have been burned over by the Hackberry Complex (see Appendix V: Supporting Documents, Rare Plants of the Hackberry Complex). The majority of these species occur in the areas around Round Valley, Rock spring, Government Holes, Pinto Mountain, Bathtub Spring, Cliff Canyon, and Pinto Valley.

Listed plant species include short-lived shrubs, ferns, annuals, cacti, herbaceous perennials, and trees. While the MNP draft FMP attempts to describe the fire tolerance and habitat flammability of these species, it is difficult to provide a complete finding without site-specific information for each population. For the purpose of this assessment, eleven species were selected from the potential list of 38 as priority species for monitoring (Table 2). Selections were based on global significance, State listing status, CNPS listing status, and potential effects to a significant portion of the population. The National Park Service Management Policies (NPS 2001) require that plant species management include Federal, State, and locally listed species.

Table 2. Priority State listed rare plants within the Hackberry Complex (André 2005).

FAMILY	GENUS	SPECIES	SSP/VAR	CNPS Status*	State Status	Longevity	Fire Tolerance	Notes	Affected by burn? X=yes, p=potentially
Fabaceae	Astragalus	cimae	var. cimae	List 1B (3-2-2)	S2.3	herb annual	?, seedbank	Fire burned through western portion of occurrence; occurrence represents highest concentration of this species; fire may have impacted up to 50% of entire known distribution of this species.	x
Poaceae	Ayenia	compacta		List 2 (2-1-1)	S3.3	shrub	probably not tolerant	Only known location in Mojave Desert; occurs in northern Providence Mtns nr. Crystal Spr	p
Onagraceae	Camissonia	boothii	ssp. boothii	List 2 (2-1-1)	S2.3	annual herb	not	Isolated and important population; represents southern-most disjunct population in CA; nr. Hackberry Mtn on road edge	x
Boraginaceae	Cryptantha	clokeyi		List 1B (3-3-3)	S1.1	annual herb	? Seedbank	Previously known from only one other location (global distribution); located/collected at Cliff Cyn (Andre/Clifton)	p
Poaceae	Enneapogon	desvauxii		List 2 (3-1-1)	Occurrence within fire represents highest concentration of this plant;	shortlived bunchgrass	?	important species, limited only to Providence mtn in CA; eastern NY; likely outside burn	p

Vegetation Resource Assessment

FAMILY	GENUS	SPECIES	SSP/VAR	CNPS Status*	State Status	Longevity	Fire Tolerance	Notes	Affected by burn? X=yes, p=potentially
Polygonaceae	Eriogonum	thornei		List 1B (3-3-3)	S1.1, SE	small shrub, perennial	not	Global distribution, high monitoring priority; of significance to botanical community; extremely rare; flowering at time of fire.	p
Fabaceae	Lotus	argyraeus	var. multicaulis	List 1B (3-1-3)	S1.3	herb perennial	not	Limited population; may be extirpated due to fire; approximately 80% of known distribution occurs within NY Mtns; any impacts will be significant; most individuals found within 4th of July Cyn.	x
Scrophulariaceae	Penstemon	calcareus		List 2 (2-1-1)	S2.3	shrubby perennial	low tolerance	probably will be uplisted to 1B, endemic to Providence Mtns	p
Scrophulariaceae	Penstemon	thompsoniae		List 1B (2-1-3)	S2.3	perennial, dies back	?	endemic	p
Scrophulariaceae	Penstemon	stephensii		List 1B (2-1-3)	S2.3	perennial, dies back	?	Endemic; historic collections from Hole in the Wall (RSABG); extremely limited distribution; approx. 80% of known distrib. Occurs in Providence Mtns; any impacts will be significant.	x
Fabaceae	Robinia	neomexicana		List 2 (3-1-1)	S1.3	perennial, small tree	not tolerant	Only known location if Mojave Desert; may not survive fire; seed does not persist in seedbank; may be rhizomatous.	x

Non-native Invasive Plants

The greater Mojave desert has a number of non-native invasive plants. Interviews with NPS staff and USGS ecologist Matt Brooks identified two issues of concern: salt cedar invasion at springs and washes and increased invasion by non-natives along road corridors used by suppression efforts. The Lake Mead National Recreation Area Exotic Plant Management Team (EPMT) had previously conducted salt cedar control at MNP. Information from past actions helped identify springs and washes with high potential for salt cedar invasion. Springs, wetlands, washes, and cattle tanks also require surveys, mapping, and control of tall whitetop, Russian knapweed, and hoary cress.

Species identified for focused early detection monitoring along road corridors include: *Brassica tournefortii*, *Salsola iberica*, *Lepidium latifolium*, *Systembrium irio*, *Descurainia sophia*, and State listed noxious weeds. These species tend to invade disturbed areas such as road edges. The park has been monitoring *Brassica tournefortii* along roadways and vector corridors; this is a species of concern to MNP staff.

Discussions with MNP Science Advisor Debra Hughson expressed concern regarding the effects of fire on threatened desert tortoise habitat. While this fire did not effect a large portion of tortoise habitat within the Preserve, with above average rainfall, there is a great potential for large-scale fires in creosote scrub throughout the area. Invasion of non-native plants into tortoise habitat is considered to be one of the greatest threats to their viability, based on dietary changes placing the animals in a state of chronic nutritional loss (USFWS 2005). This issue is further discussed in the Hackberry Complex Wildlife Assessment.

Closed Areas

Discussions with park staff indicated there was concern over the use of closed or abandoned roads within the Preserve. The MNP GMP notes the importance of keeping vehicles on established roadways; illegal off-road activity is recognized desert-wide as contributing the loss of important biological soil crusts, native vegetation, sensitive wildlife, and cultural resources. The Hackberry Complex burned over many previously disturbed areas that were in the process of revegetation. This fire has restarted the clock on these sites, burning off younger vegetation that had been camouflaging abandoned roads and desert washes. Without this vegetation, old road tracks are clearly visible and will invite illegal off road traffic should they be left untreated. Many of these old roads lead to abandoned mine lands and other cultural sites, and pose a threat to public safety and the conservation of resources.

Livestock Effects

Of the approximately 17,300 acres within the Gold Valley allotment, about 9,900 acres burned, constituting a short-term loss of approximately 725 AUMs, or 57% of range production. Colton Hills experienced a loss of about 16,800 acres of the allotments 190,300 acres, or approximately 255 AUMs, 9% of the total grazing capacity.

The 2002 Wildhorse fire is dominated by exotic grasses (red brome and cheat grass) and native shrubs are poorly represented. The condition of this older burned area demonstrates the importance of range deferment for reestablishment of native vegetation.

Existing fences to the west and north of the Hole in the Wall fire management office can be used to exclude livestock from nearly all burned areas within active allotments with minimal construction and repair. Two alternative fence lines exist for excluding livestock in Black Canyon: one at the Hole in the Wall Office, another approximately three-quarters miles north. Additional fence construction within Beecher and Borrego Canyons would effectively exclude livestock from the remaining southern portions of the burn. In total, approximately 0.8 miles of new construction and 4.4 miles of repair would be required to provide for grazing deferment. Once burros are removed from the burned area as provided in the specifications, this fence will serve to exclude burros from re-entering (see Cultural Resource Assessment).

Pinon Regeneration in Mid Hills Campground

Approximately two thirds of Mid Hills Campground experienced crown fire, completely killing woodland trees in and around the campsites. The upper elevation portion of the campground was not burned. Many trees along the margin of the burned area experienced substantial crown scorch. Although the foliage was not consumed, most of these trees were either killed outright or will experience decline and eventual mortality. Viable cones were observed in pinon pines in this area, and given time may eventually provide natural regeneration in adjacent areas. Seed cast will be limited to areas within approximately one tree height of cone bearing trees, therefore, natural regeneration will be limited to the edge of the surviving stand in the upper portion of the campground. Very little surviving juniper is present in the area of the campground. The lower portions of the campground will revert to sprouting shrubs and grasses.

Registered Mojave Yucca

The fire did not affect the tallest known Mojave yucca within the Preserve. The fire perimeter is located at least one-quarter mile from the site where the tree is growing.

IV. RECOMMENDATIONS

Based on the results of the above observations:

A. Emergency Stabilization

Replace Resource Protection Fencing

Construct approximately 0.8 miles of new temporary fence and repair approximately 4.4 miles of existing permanent fence to exclude livestock from burned areas. Locations of fence construction are depicted on the Treatments Map.

Monitor State Listed Plants Species

Stabilize 11 State listed rare plant populations within the fire perimeter of the Hackberry Complex as defined by field assessments and monitoring (see Vegetation Treatments Map). This includes site visits to all known occurrences to 1) record the effects of the fire to each site, 2) map, photo-document, and census (CNDDDB 2005) each occurrence, 3) collect voucher specimens as needed and as appropriate, 4) prescribe management responses and submit supplemental funding requests. Occurrences showing a decrease in distribution and/or number of individuals greater than 30% require management action. Actions will consist of the following, depending upon the recommendations from site monitoring:

- Conservation of propagule material; storage may be at either the Rancho Santa Anna Botanical Garden or Center for Plant Conservation
- Propagation and reintroduction of individual plants to appropriate habitat
- Mitigation of threats to the population (may include removal of non-native species, protection from predation, and/or protection from human disturbance including off-road vehicles)
- Request supplemental funds through the emergency stabilization or rehabilitation programs to implement actions

Non-Native Invasive Species Control

Early detection and control of non-native invasive plant species within and adjacent to the burn will be critical in the next 12 months (See Vegetation Treatments Map).

Recommendations include visiting each spring, riparian corridor, wash, and cattle trough identified as having a high potential for invasive species establishment. Additionally, 44 miles of roads have been identified as vector corridors for the spread of invasive species as associated with vehicle traffic. These vector corridors will be monitored for early detection and control of priority species as described above.

Abandoned Road Closures and Signs

Post informational signs, rehabilitate visible portions of 34 abandoned roads leading into

wilderness and sensitive resource areas, place boulder barricades across 23 abandoned roads and wash openings at the point of connection to open roads, define the perimeters of select campsites at Mid Hills Campground, and place seven administrative gates to control access to sensitive resource areas and hazardous mine sites (see Abandoned Roads Treatment Map). Before the next winter rainfall, it will be necessary implement resource protection measures to ensure that disturbances from off-road vehicle traffic are kept to a minimum.

B. Rehabilitation

- Based upon monitoring of non-native species, control new populations through long-term rehabilitation actions
- Based upon State listed plant monitoring, request funds to implement management actions
- Area closures will require follow up monitoring and maintenance to determine the effectiveness of treatments. Request additional funds as needed to supplement boulders, fence posts, carsonite signs, and consider revegetation as needed.

C. Management Recommendations – Non-Specification Related

- Conduct additional research on the effects of fire on desert tortoise habitat
- Fire is a relatively new disturbance to the Mojave ecosystem and very little is known about its effects. These two large landscape-altering fires would be very valuable to monitor through time. We suggest consulting with USGS Fire Ecologist/Research Botanist Matt Brooks at the Las Vegas Field Station to design future monitoring plans.

V. CONSULTATIONS

Jim André	Director SMGDRC	UCR	(760)733-4222
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Kate Blair	Maintenance Worker	MNP	(760) 252-6100
Sandee Dingman	Biologist	MNP	(760) 252-6147
Rob Fulton	Site manager, DSC	CSUF	(714) 278-2428
Larry Whalon	Chief Resources Management	MNP	(760) 252-6101
Lisa Wilson	Administrative Officer	MNP	(760) 252-6101

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Additional references can be found at the Mojave National Preserve Headquarters Office:
Memorandum Updating Cost Estimates and DOI Emphasis for FY 2008-2010 Line Item
Construction and Change in Operating Costs (March 4, 2005)
General Management Plan, Mojave National Preserve
Draft Livestock Management Plan for the Mojave National Preserve
Gold Valley Allotment Data (April 1994)
Allotment Management Plans for Colton Hills and Gold Valley

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**BURNED AREA EMERGENCY STABILIZATION PLAN
HACKBERRY COMPLEX
SOIL AND WATERSHED RESOURCE ASSESSMENT**

I. OBJECTIVES

- Assess overall soil and watershed changes caused by the fire, particularly those that pose substantial threats to human life and property, and critical natural and cultural resources. This includes evaluating changes to soil conditions, hydrologic function, and watershed response to precipitation events,
- Develop a map of soil burn severity,
- Identify potential flood and erosion source areas,
- Identify potential threats to life, property, cultural, and natural resources in relation to flood and erosion source areas,
- Develop treatment recommendations, and
- Identify future monitoring needs, if necessary.

II. ISSUES

- Potential threats to human life and property within and downstream of the Hackberry and Wildhorse Fires from potential increases in rockfall, dust storms, and overland flow that could cause accelerated surface erosion and flooding.
- Threats to cultural resources from increased flow and ash and sediment deposition.

III. OBSERVATIONS

A. Background

1. Physiography

The Hackberry Complex is located within the Mojave Desert in San Bernardino County, California, approximately thirty miles south of Primm, Nevada. The Mojave Desert comprises the southwestern quadrant of the Basin and Range physiographic province, a vast region dominated by rugged mountain ranges and alluvium-filled basins that extends from northern Nevada to Mexico and from the California's Sierra Nevada and southern coastal region eastward to central Arizona and Utah. The Mojave Desert is transitional between the lower, hotter Sonoran Desert to the south and the colder high desert of the Great Basin to the north. The Mojave is characterized by isolated mountain ranges and ridges separated by alluvium-filled, irregular large valleys. The Wildhorse Fire burned along the crest of the Providence-Mid Hills-New York Mountain ranges. The fire also burned into the valleys on the east side of the mountain range. The Hackberry Fire burned on Hackberry Mountain. Elevations in the fire areas range from 3,600 feet at the southern end of the Wildhorse Fire and the east side of the Hackberry Fire to 6,600 feet at the northern end of the Wildhorse Fire.

2. Geology and Soils

The geology of the Mojave National Preserve is very complex and diverse due to igneous and metamorphic activity and structural deformations associated with these activities. Erosional geologic processes have altered the landscape resulting in outcrops of rocks ranging from Precambrian to recent ages. The majority of the fire areas are underlain by igneous volcanic and plutonic rocks.

Most of the fire areas lie on hillslope and pediment geomorphic positions. Some areas on the fringes of the fire are on alluvial fans. The alluvial fan areas provide the best substrate for the development of microbiotic soil crusts. Microbiotic crusts are comprised of algae, mosses, lichen and cyanobacteria that form a crust of soil particles bound together by organic materials. Crust presence or absence, areal coverage, and thickness vary depending on soil texture, conductivity, pH, moisture, and possibly temperature. Because microbiotic soil crusts are concentrated in the top 1 to 4 mm of soil, they primarily affect surface processes. These include stabilizing soil surfaces against wind and water erosion, atmospheric nitrogen fixation, water infiltration, nutrient uptake by native plants, seedling germination, and soil temperature reduction.

3. Climate

The Mojave Desert is characterized by extreme variations in daily temperatures and more arid conditions than other American desert regions. Freezing temperatures occur during the winter, particularly in higher elevation regions. Summers tend to be hot, dry, and windy. Average precipitation is highly variable from one year to the next. Almost all precipitation arrives in the winter, but the region also experiences rare, intense summer thunderstorms. It is during these rare flood events that some of the most dramatic changes take place on the desert landscape. Rainfall in the fire areas ranges from 7 to 10 inches per year.

4. Hydrology and Water Quality

There are no perennial streams within the fire areas. All stream channels are ephemeral, flowing only during and immediately after rainfall events. Stream flows are very flashy with sudden increases and decreases in flow. Debris, including vegetation, sand, rocks, and large boulders, are transported downstream during these storm events.

Small springs and seeps provide isolated and limited water for plants, wildlife, or domestic purposes. Highest discharge occurs during the wet, late winter and spring months with lowest discharge during the summer months. The springs are small, generally flowing less than five gallons per minute. Some springs produce potable water, but overall water quality is poor because of high dissolved mineral concentrations. Many springs have been altered by the installation of retention dams, pipelines, and troughs for livestock use. In some igneous and hard rock areas, rainwater may collect as small pools in rock bowls and remain for a few weeks, depending on the rate of evaporation. Water wells have been drilled specifically for visitor and administration use at the Mid Hills and Hole-in-the-Wall campgrounds.

5. Air Quality

Processes involving sand and dust transport play an important roll in shaping the landscape and the ecosystem of the Mojave region. Barren rock, alluvium, and dry lakebeds are all sources of dust and sand. Typically most dust (clay and silt) becomes suspended in the wind and is carried away from the region by prevailing winds, when high dust concentrations in the air can create near "white-out" conditions. In contrast, wind moves sand along the surface as a saltating bedload. The moving sand will stall and accumulate as dunes where the wind rises over a barrier (such as a mountain range). However, for dunes to persist a sand source area must provide a sufficient flux of new sand, otherwise both wind and running water will remove sand faster than it can accumulate, and therefore, prevent dune development or cause existing dunes to diminish or even vanish.

Dust storms in the Mojave region can be quite intense, and a hazard when dust concentrations are high enough to cause "white-out" conditions. Windblown dust can be harmful to people breathing it. Dust may contain toxic compounds and it can carry pathogens such as the virus that causes Valley Fever; it also carries away valuable topsoil. On the other hand, dust that settles

into stony soils of the desert provides improved retention of moisture and adds nutrients. Thus, dust can be both beneficial and destructive.

The Environmental Protection Agency has classified the Mojave National Preserve as a non-attainment area for ozone and particulate matter less than 10 microns in diameter (PM₁₀) standards. Non-attainment areas are areas that are not in compliance with the national ambient air quality standards, and therefore must reduce pollution to reach compliance. Under certain wind conditions, Mojave National Preserve is downwind of the air pollutants generated in the heavily populated Los Angeles Basin.

B. Reconnaissance Methodology

The purpose of a burned area assessment is to determine if the fire caused emergency watershed conditions and if there are values at risk from these conditions. If emergency watershed conditions are found, and values at risk are identified, then the magnitude and scope of the emergency is mapped and described, values at risk and resources to be protected are analyzed, and treatment prescriptions are developed to protect values at risk. Emergency watershed conditions include both hydrologic and soil factors. The most significant factor is loss of soil cover, which leads to erosion and changes in hillslope hydrologic function in the form of decreased infiltration and increased runoff. Such conditions lead to increased flooding, sedimentation and deterioration of soil condition.

Burned area evaluations included:

- Identifying fire-caused changes in soil properties and hydrologic function;
- Determining areal extent and strength of hydrophobic soil conditions;
- Determining post-fire infiltration rates;
- Verifying and modifying the Burned Area Reflectance Classification (BARC) image to create the soil burn severity and watershed response maps;
- Identifying sediment source areas and erosion potential;
- Determining current channel and culvert capacities; and
- Identifying potential threats to human life, property, and critical natural and cultural resources.

The Interagency BAER Team hydrologists conducted aerial reconnaissance flights and field visits to review resource conditions after the fire. The main objectives of the field visits were to 1) evaluate soil burn severity and watershed response in order to identify potential flood and erosion source areas; 2) identify and inventory values at risk, 3) identify the physical and biological mechanisms that are creating risks; 4) review channel morphology and riparian conditions; 5) inspect hillslope conditions; and 6) determine needs for emergency stabilization. Values at risk are properties, capital improvements, and cultural resources located within or downstream of the fire that may be subject to damage from flooding, ash, mud and debris deposition, and hillslope erosion. Values at risk for the Hackberry Complex include:

- Homes and other structures,
- Campgrounds,
- Roads,
- Cultural resources.

A Burned Area Reflectance Classification (BARC) is a satellite-derived map of post-fire changes in spectral reflectance. This is used in combination with field observations to develop a map of post-fire soil and watershed condition. Landsat imagery was acquired June 26, 2005 and was used in combination with a pre-fire Landsat image from a similar time of year to produce the BARC for the Hackberry Complex. The BARC map was evaluated by field visits and helicopter reconnaissance to produce the final soil burn severity map. The soil burn severity map was used to evaluate post-fire erosion rates and watershed response.

1. Soil Burn Severity

Soil burn severity is not the same concept as fire intensity and fire severity as recognized by fire behavior specialists. Fire intensity and fire severity relate to fire behavior and fire effects on overstory vegetation and ground fuels, respectively while soil burn severity relates specifically to effects of the fire on soil conditions (e.g., amount of surface litter and duff, infiltration rate,

erodibility, soil structure). Although soil burn severity is not based primarily on fire effects on vegetation, post-fire vegetative conditions and pre-fire vegetation density are among the indicators used to assess soil burn severity, and are among the primary factors affecting post-fire spectral response upon which the BARC classification algorithm is based. In combination with field observations, a soil burn severity map is produced by adjusting the BARC map as necessary.

Table 1. Definitions of Terms Commonly used in Soil and Watershed Burned Area Assessments.

Term	Definition
Fire Intensity	Rating based on temperature, flame length, rate of spread, heat of combustion and total amount and size of fuel consumed. Accounts for convective heat rising into the atmosphere and fire effects to the overstory.
Fire Severity	Rating based on temperature, moisture content of duff and fuels lying on the ground, heat of combustion of conductive and radiant heat penetrating into the soil and affecting soil characteristics.
Soil Burn Severity	Rating of fire impacts on soil productivity and erosion rate, and the potential for vegetation recovery. Burn severity is delineated on topographic maps as polygons. Classes of burn severity are High, Moderate, Low and Unburned.
Watershed Response	A qualitative evaluation of the amount of soil cover; amount and distribution of impermeable surfaces (rock outcrop, hydrophobic soils), and canopy conditions. Classes of watershed response are High, Moderate and Low.
X-year Storm Event	Rainfall occurring with a specific probability (1 in X chance) based on historical data. For example, the 10-year storm has a 1 in 10 (10%) chance of occurring in any given year, while the 100-year storm has a 1 in 100 (1%) chance of occurring in any given year.
X-year Flood	Stream discharge with a specific probability of occurring (1 in X chance) based on historical data. The 100-year flood may or may not occur as a result of a 100-year rainfall; the two are independent.

In some cases, there may be complete consumption of vegetation by fire, with little effect on soil properties. In general, denser pre-fire vegetation with a deeper litter and duff layer results in longer heat residence time, hence more severe effects on soil properties. For example, deep ash after a fire usually indicates a deeper litter and duff layer prior to the fire, which generally supports longer residence times. Increased residence time promotes the formation of water repellent layers at or near the soil surface, loss of soil organic matter, and loss of soil structural stability. The results are increased runoff and soil particle detachment by water and wind, and transport off-site.

Soil burn severity parameters include changes in litter and duff, loss of soil structure, destruction of fine and very fine roots in the surface horizon, and development of hydrophobic (water repellent) soil surfaces. Changes in litter/duff conditions as affected by the fire were noted and compared to pre-fire conditions. Water repellency was evaluated by determining if water repellency was present, and if so, the depth and thickness of the water repellent layer was noted.

2. Soil Erosion

Fire effects were evaluated in terms of soil condition parameters. These parameters included changes in litter and duff (vegetative ground cover), destruction of fine and very fine roots in the surface horizon, susceptibility to erosion, and development of hydrophobic (water repellent) soil surfaces. Changes in vegetative ground cover as affected by the fire were noted and compared to pre-fire conditions. Stability and strength of surface soil structural aggregates was examined. Water repellency was evaluated by observing the depth and thickness of a water repellent horizon in surface soils where it existed, and the length of time a water drop remained beaded on the surface.

3. Watershed Response

On-the-ground field observations and aerial reconnaissance within and downstream of the burn areas were conducted to determine watershed response. Channel morphology related to transport and deposition processes were noted, along with channel crossings and stream outlets. Observations included condition of riparian vegetation and the volume of sediment stored in

channels and on slopes that could be mobilized. Burn severity and changes in soil infiltration were also considered.

The major determining factor influencing runoff and erosion from burned hillslopes is the amount of disturbance to the forest floor that protects the underlying mineral soil (Robichaud 2000). The unburned forest floor consists of a litter layer (leaves, needles, fine twigs, bark flakes, matted dead grass, mosses and lichens, O1 soil horizon) and a duff layer (partially decomposed remnants of the material in the litter layer, O2 soil horizon) (Martin and Moody 2001). These layers absorb most of the rainfall, provide storage of water and obstruct the flow of water on hillslopes. The combustion process converts the forest floor into ash and charcoal. Ash and small soil particles seal soil pores (Morin and Banyamini 1977, Neary et al. 1999), decreasing the infiltration rate (Fuller et al. 1995, Barfield et al. 1981) and increasing potential runoff and erosion. When the charcoal and ash are removed from the hillslope by post-fire runoff or wind, the soil is left bare and susceptible to rain splash and overland flow.

Overland flow occurs as a result of rainfall that exceeds soil infiltration capacity and the storage capacity of depressions. On the unburned forest floor, overland flow follows a myriad of interlinking flow paths that constantly change as organic material (litter and duff layers) and inorganic material (rock) are encountered (Huggins and Burney 1982). Consumption of the forest floor by fire alters the path of overland flow by reducing the overall length of the flow path, resulting in the concentration of flow into a shorter flow path. This concentration of overland flow increases the hydraulic energy of the flow and can result in rill erosion. At the watershed scale, the reduction of hillslope flow path lengths and the formation of rills that have a high water conveyance capacity reduce the times of concentration or the amount of time for overland flow to reach a defined point within the watershed. Although less litter, duff, and vegetation is present in the desert than in a forested environment, the same processes occur. However, the differences in infiltration and overland flow between pre-fire and post-fire conditions are less in a desert environment than in a forest because there is less ground fuel to burn in the desert.

Overland flow is also influenced by the fire induced water repellency (hydrophobicity) of the soils. The reduction of infiltration due to water repellency can increase overland flow (DeBano et al. 1967). Infiltration curves for water repellent soils reflect increasing wettability over time once the soil is placed in contact with water. Water repellency decreases (hence infiltration increases) with time because the hydrophobic substances responsible for hydrophobicity are slightly water soluble and slowly dissolve, thereby increasing wettability. In general, hydrophobicity is broken up or is sufficiently washed away within one to two years after a fire (Robichaud, 2000).

Raindrops striking exposed mineral soil with sufficient force can dislodge soil particles and small aggregates. Once soil particles are detached by splash erosion they are more easily transported in overland flow. Surface erosion is defined as the movement of individual soil particles by a force, and is initiated by the planar removal of material from the soil surface (sheet erosion) or by concentrated removal of material in a downslope direction (rill erosion). Surface erosion is a function of four factors: 1) susceptibility of the soil to detachment, 2) magnitude of external forces (raindrop impact or overland flow), 3) the amount of protection available by material that reduces the magnitude of the external force (soil cover), and 4) the management of the soil that makes it less susceptible to erosion (Foster 1982, Megahan 1986).

C. Findings

1. Soil Burn Severity

Table 2 displays a summary of soil burn severity acres and percentages by class for the Hackberry Complex. The soil burn severity is based on Landsat imagery obtained on June 26, 2005 and field reconnaissance through June 29, 2005. Any unburned islands within the fire perimeter that burned on June 30 or later are not included in this assessment. A soil burn severity map is included in Appendix IV.

Table 2. Acres by Soil Burn Severity

Soil Burn Severity	Acres	Percent
Wildhorse Fire		
High	0	0
Moderate	8,210	13
Low	42,417	66
Unburned	13,120	21
Total	63,755	100
Hackberry Fire		
High	0	0
Moderate	23	0
Low	5,139	72
Unburned	2,003	28
Total	7,165	100

The Hackberry Complex was dominated by low soil burn severity. The Hackberry and Wildhorse fires burned through desert vegetation. While fire intensity varied throughout the burn area, the rapid rate of fire spread through predominately fine fuels with light fuel loading, produced short fire residence times. The resulting burn severity is low throughout most of the burn area with some areas of moderate burn severity. The soil burn severity classification is determined by changes in soil parameters including duff and litter cover, organic matter and fine roots, soil structure, and infiltration rate. Soil burn severity classes in the Hackberry Complex area are described in Table 3. Appendix III contains photos showing examples of low and moderate soil burn severity classes.

Very small areas of high soil burn severity were observed in the Hackberry Complex. These areas are very limited and too small to map as individual units. They are limited to areas where pre-fire vegetation consisted of dense stands of pinon pine and juniper, under which deep layers of litter and duff had accumulated. These areas showed the effects of longer periods of intense heat as observed by the complete loss of surface organic materials and a deep ash layer. Surface soil structure does not appear to have been significantly altered.

Table 3. Soil Burn Severity Classes

Soil Burn Severity	Characteristics
Unburned	Unburned areas. Vegetation canopy, ground cover, and soil characteristics are not altered from pre-fire conditions. Thin (< 1/16 inch), weak layer of water repellency found near vegetation; no water repellency observed between vegetation clumps.
Low	Shrub canopy may be scorched or consumed. Unburned and charred, but recognizable, grasses and shrub litter present at the surface. A strong but thin water repellent layer at the ash-soil interface is present in fine-grained soils, under or near vegetation clumps. The water repellent layer is discontinuous. Little to no water repellency observed in coarse gravels between vegetation clumps. Unburned patches between shrubs.
Moderate	Shrub canopy consumed, with stobs or stems left. Pinon pine canopy consumed, with branches remaining. Unburned and recognizable charred leaf litter and twigs remain within a very thin ash layer in shrub areas; a strong but thin water repellent layer is present but discontinuous. Unburned patches between shrubs are smaller but still present.
High	Small, isolated areas beneath some pinon pine and juniper trees. Strong water repellent layer, 1 to 2 inches deep beneath an ash layer that is 2 to 3 inches deep. Some charred, but recognizable organic material is present in ash layer.

2. Erosion Potential

Nearly all soils within the burn area are inherently susceptible to wind erosion under unburned conditions. The fire consumed most of the shielding plant and litter cover, which provided wind protection and soil stability. When soils vulnerable to wind erosion are stripped of vegetation, soil particles become available for transport by the wind through surface creep, saltation or suspension. Numerous dust devils in the burned area were observed while this assessment was conducted. Dust storms can create serious visibility problems on roadways. The greatest risk of dust storms as a result of the fire occurs on roads within and downwind of the fire areas. It may take several years before these areas have reestablished enough vegetation to reduce wind erosion and resulting dust storms.

The fire also affected microbiotic soil crusts present in the area. The degree to which crusts are damaged by fire depends on the severity of the fire. Low severity fires do not remove all the crust structure, allowing for regrowth without significant soil loss. Shrub presence increases fire severities, decreasing the likelihood of early vegetative and crust recovery. Full recovery of microbiotic crusts is a slow process, particularly for mosses and lichens. Recovery of mosses and lichen primarily depends on the area of coverage affected by the fire, how much crust was burned, and the amount of rainfall the burned area receives after the fire. While cyanobacteria recovery can be complete within 1 to 5 years, given average climate conditions, recovery of mosses and lichens is much slower, especially if there are few or no unburned islands to function as a propagating source. Under low burn severity conditions, cyanobacteria occupying shrub interspaces have a greater likelihood of survival because they occur below the moss/lichen crust, usually in the top 0.5 cm of soil, where they are protected from the heat. Airborne spores of cyanobacteria from these interspaces can inoculate other areas of the burn, enabling rapid recovery of these organisms and providing a modest stabilizing influence on soil surfaces until the moss and lichen crust is re-established.

Some localized ash and soil movement may occur within parts of the burn area as a result of water runoff and wind transport. This will depend on the timing, duration, and intensity of rainfall and wind events following the fire, as well as the recovery of microbiotic crusts and plant communities. The timing of wind events is relevant, as wind erosion may remove much of the loose, fine-grained material prior to rain events. Large increases in wind and water erosion are not anticipated from this fire. Once the vegetation recovers, erosion rates will return to pre-fire conditions. An initial flush of ash and sediment may occur in some of the springs and one cultural site where the slopes above and adjacent to the springs burned. Unburned islands were prevalent throughout the burned area and should serve as propagating source areas for the recovery of mosses and lichen. Considering the extent of low burn severity within the burned area, and the unburned inter-shrub spaces, it is highly likely that cyanobacteria survived the fire. These organisms are expected to recover rapidly and assist in stabilizing soil surfaces against wind and water erosion.

3. Watershed Response

The primary watershed response of this fire is expected to include: 1) an initial flush of ash and vegetation debris; and 2) small amounts of localized sediment erosion and deposition. Post-fire runoff and erosion are not expected to increase significantly over pre-fire levels. The fire was mapped as low to moderate watershed response, corresponding with the low to moderate amount of soil burn severity. Field observations indicated only small, scattered patches of water repellency, even within moderate soil burn severity areas. Temporary increases in spring flow may occur due to the reduction in evapo-transpiration where vegetation was burned around springs. Prior to the fire, sparse vegetation, rocky slopes, and shallow soils resulted in very flashy stream flows, which carried sand, sediment, plants, large rocks, and other debris, in response to rainfall events. These debris-laden flash floods will continue to occur with very little difference from pre-fire conditions. However, the post-fire response may also flush dead vegetation along with the sediment and rock debris. The potential for these runoff events will be the highest during the first summer thunderstorm season after the fire.

Vegetation recovery is largely dependant on climatic cycles. If wet winters occur, vegetation recovery could be rapid, with annual forbs and grasses providing ground cover similar to that observed in the 3 year old Wildhorse burned area, within the 2005 Wildhorse fire. By the second winter season, annual forbs and grasses should provide sufficient cover to reduce watershed response to pre-fire levels. Shrubs, cactus, and juniper species will likely take several years to re-establish, as evidenced by the lack of these species within the 3 year old Wildhorse burn. Once

sprouting vegetation begins to produce brush crowns and a duff/litter layer, watershed response will be reduced further. However, if winters are dry, vegetation recovery will be slow, and thus the establishment of ground cover and shrub and cactus communities will be slow, and watershed response will remain slightly elevated over pre-fire conditions.

4. Values at Risk

Residential structures, campgrounds, and one cultural site were evaluated for risk from increased erosion, flooding or debris flows. The BAER hydrologists conducted a rapid assessment of life, property, and critical natural and cultural resources within and downstream of the fires. Values at risk are shown on the Soil Burn Severity and Values at Risk Map in Appendix IV. Each value at risk on the map is labeled with an ID number which corresponds to the numbers in Table 4.

Detailed field evaluations were conducted at twelve sites within or downstream of the burned areas to determine if threats to life, property, or critical cultural resources were present. All structures or campgrounds evaluated in detail are at no or low risk from erosion, flooding or debris flows. The cultural site evaluated was determined to be at a moderate risk for ash and sediment deposition within the site which could leach through the site and compromise its integrity. Four straw wattles are proposed to be installed upslope of the site.

Roads on federal and private land are at risk of flooding or being inundated with dead vegetation, sediment, and rock. This risk exists within the watershed under unburned conditions given the right storm event. Post-fire conditions have increased this pre-existing risk.

Table 4. Potential Watershed Risk to Structures and Recommended Treatments.

Number	Potential Watershed Risk	Comments	Recommended Treatments
1	Low	Overflow channel runs between trailers, however this channel is not connected to the main channel	None
2	None	House is located on bench above channel. Majority of watershed is outside burn area	None
3	Low	House is located on bench above and away from channel	None
4	Low	House is located on terrace above channel	None
5	Low	House is located on terrace above channel	None
6	Low	Small contributing area. Stability of large boulders on hillslope unchanged	None
7	Low	Small contributing area. Stability of large boulders on hillslope unchanged	None
8	Low	Small contributing area. Stability of large boulders on hillslope unchanged	None
9	None	7IL Ranch. Majority of contributing watersheds are unburned. Structures are located on bench above	None
10	None	Hole-in-the-Wall Campground is located on terrace above channel	None
11	Low	Mid Hills Campground is located on top of ridge. Some nuisance ash and sediment may move through	None
12	Moderate	Cultural site. Ash and sediment may be washed into cultural site	Install wattles upslope of site
	None	Other structures outside of the burn area are not at risk	None

IV. RECOMMENDATIONS

A. Emergency Stabilization – Fire Suppression Repair

None

B. Emergency Stabilization

1. Post-Flood Event Road Cleanup:

Situation: During major storm events, road-stream crossings and other sections of roadways can be expected to flood. Flood events will flush dead vegetation along with sediment and rock debris onto the roadways making them impassible and unsafe.

Recommendation: Inspect roads after flood events and perform maintenance as necessary.

See Part F; Specification #6, Post-Flood Event Road Cleanup

2. Install Dust Warning Signs:

Situation: Wind erosion off the burned area will increase dust storms. Dust storms in and immediately down wind of the burned areas will greatly diminish visibility. Motorists driving on the roadways are at increased risk of vehicular accidents, including risk of human injury and/or fatalities.

Recommendation: Install dust warning signs at the entrances to the burned area on the Cedar Canyon and Black Canyon Roads.

See Part F; Specification #7, Replace and Install Public Safety Signs

C. Rehabilitation:

None

D. Management Recommendations – Non-Specification Related

None

V. CONSULTATIONS

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Rare Plants in Hackberry Complex														
Information acquired from Jim Andre 06-29-2005 and previous analysis done for MOJA FMP														
FAMILY	GENUS	SPECIES	SSP/VAR	CODE	CNPS Status*	State Status	Known Locations in MNP	Longevity	Habitat	Habitat Flammability	Fire Tolerance	FMP Issue	Notes	FMP priority
Liliaceae	Allium	nevadense		ALNE	List 2 (3-1-1)	S1.3	Castle Pks, CL/PR Mtns	bulb	sparse shrublands	low	tolerant	FU + sup - no issue		
Malvaceae	Abutilon	parvulum		ABPA	List 2 (3-1-1)	S1.3	PR Mtns	shortlived shrub	open shrublands	moderate	not	FU - no issue	On edge of burn at Rock Spring	
Pteridaceae	Argyrochosma	limitanea	var. limitanea	ARLI	List 2 (3-1-1)		NY Mtns	fern, perennial	limestone cliffs	low	not	Sup - no issue		
Asclepiadaceae	Asclepias	nyctaginifolia		ASNY	List 2 (3-1-1)	S1.3	NY Mtns	herb perennial	sandy slopes and washes	low	?, seedbank	Sup - no issue	Flowering at time of fire	
Fabaceae	Astragalus	cimae	var. cimae	ASCI	List 1B (3-2-2)	S2.3	Cima, MH, IV, CL, NY	herb annual	p-j woodland and sagebrush steppe	high	?, seedbank	Sup - possible issue	Fire burned through western portion of occurrence; occurrence represents highest concentration of this species; fire may have impacted up to	
Pteridaceae	Astrolepis	cochisensis	ssp. cochisen	ASCO	List 2 (2-1-1)	S2.3	PR, CL	fern, long-lived perennial	limestone rocks and soils, slopes with pinyon	moderate	intolerant	FU - no issue		
Poaceae	Ayenia	compacta		AVCO	List 2 (2-1-1)	S3.3	PR	shrub	dense shrubland	high	probably not tolerant	FU - no issue	Only known location in Mojave Desert; occurs in northern Providence Mtns nr. Crystal Spr	
Asteraceae	Berberis	fremontii		BEFR	List 3 (?-?-1)	S2?	GR, PR, NY	big shrub, long-lived	pj woodland	high	?, probably not tolerant	FU - no issue; Sup possible issue	Not likely to recover; need to confirm extent of impact.	
Onagraceae	Camissonia	boothii	ssp. boothii	CABO	List 2 (2-1-1)	S2.3	MH	annual herb	sandy wash near Rock House	low	not	Sup - needs avoidance	Isolated and important population; represents southern-most disjunct population in CA; nr. Hackberry Mtn on road edge	x
Euphorbiaceae	Chamaesyce	abramsiana		CHAB	List 2 (3-2-1)	S1.2	KD, Goffs area	annual herb	dunes	very low	.	.		
Scrophulariaceae	Cordylanthus	parviflorus		COPA	List 2 (3-1-1)	S1S2	PR, NY	herb perennial	washes, sandy soils	low		Sup - no issue, FU - no issue		
Cactaceae	Corypantha	vivipara	var. rosea	COVI	List 2 (2-2-1)	S2.2	MH, NY, IV, CL	small cactus	sparse shrublands	low	low tolerance	Sup - trampling, FU - no issue		
Boraginaceae	Cryptantha	clokeyi		CRCL	List 1B (3-3-3)	S1.1	NY Mtns? (check Andre/Clifton collection)	annual herb	pinyon woodlands, rocky substrate	high	? Seedbank	Sup - no issue	Previously known from only one other location (global distribution); located/collected at Cliff Cyn	
Poaceae	Enneapogon	desvauxii		ENDE	List 2 (3-1-1)	Occurrence with	PR Mtns	shortlived bunchgrass	pinyon woodlands, rocky substrate	high	?	FU - no issue	important species, limited only to providence mtn in CA; eastern NY; likely outside burn	x

Asteraceae	Erigeron	utahensis		ERUT	List 2 (3-1-1)	S1.3	PR, NY	shortlived perennial herb	open pinyon woodlands and limestone gravelly soils	moderate		FU - no issue, Sup - no issue		
Hydrophyllaceae	Eriodictyon	angustifolium		ERAN	List 2 (2-1-1)	S2.3	GR, NY	perennial low shrub	rocky, sandy washes	low	tolerant? May crownspout	FU - no issue, Sup - no issue		
Polygonaceae	Eriogonum	thornei		ERTH	List 1B (3-3-3)	S1.1, SE	NY (two occurrences)	small shrub, perennial	pj woodland	high	not	Sup - needs avoidance	Global distribution, high monitoring priority; of significance to botanical community; extremely rare; flowering at time of fire.	x
Polygonaceae	Eriogonum	umbellatum	var. juniporinum	ERUM	List 2 (3-1-1)	S1S2	PR Mtns	small herb perennial	pj woodland, sagebrush steppe	high	not	FU - no issue		
Fabaceae	Lotus	argyraeus	var. multicaulis	LOARN	List 1B (3-1-3)	S1.3	NY (four occurrences)	herb perennial	limestone, rocky soils	low	not	Sup - issue, needs mapped	Limited population; may be extirpated due to fire; approximately 80% of known distribution occurs within NY Mtns; any impacts will be significant; most individuals	x
Poaceae	Lycurus	setosus		LYSE	List 2 (3-2-1)	NOT ON LIST	NY	perennial grass, tufted	joshua tree woodland	high	? Not	Sup - issue, needs mapped		
Scrophulariaceae	Maurandya	antirrhiniflora	ssp. antirrhini	MAAN	List 2 (3-1-1)	S1.3	PR	small herbeaceous perennial	rocky soils and washes	low	?	FU - no issue		
Nyctaginaceae	Mirabilis	coccinea		MICO	List 2 (2-1-1)	S2.3	NY, Castle Pk	herb perennial/annual	sparse shrublands, limestone gravels	low	? Low, seedbank	Sup and FU - no issue		
Poaceae	Muhlenbergia	arsenei		MUAR	List 2 (2-1-1)	S1S2	CL, NY	small bunchgrass	limestone outcrops, high elevation	low or very high	probably moderately tolerant	FU, SUP - no issue	widely scattered on Clark	
Poaceae	Muhlenbergia	fragilis		MUFR	List 2 (3-1-1)	S1.3?	CL, NY	annual grass	limestone washes, gravels	low	?, seedbank	FU, SUP - no issue	limestone endemic	
Poaceae	Munroa	squarrosa		MUSQ	List 2 (3-2-1)	S1S2	CL, NY	matted annual grass	sparse, rocky shrubland	low	seedbank	SUP, FU - no issue		
Cactaceae	Opuntia	curvospina		OPCU	List 2 (3-2-3)	S1.2	NY	perennial cactus	rocky, pj woodland	high	not tolerant	Sup - needs avoidance	Along ridge line, some taxonomic questions; status valid	
Pteridaceae	Pellaea	truncata		PETR	List 2 (2-1-1)	S1S2	NY, Hackberry Mtn, Woods Mtn, Caste Peaks	perennial fern	rocky, cliffs	low	not tolerant	SUP, FU - no issue		
Scrophulariaceae	Penstemon	calcareus		PECA	List 2 (2-1-1)	S2.3	PR	shrubby perennial	limestone rocks and cliffs, open areas with pinyon	moderate	low tolerance	FU - needs mapped and avoidance	probably will be uplisted to 1B, endemic to Providence Mtns	x
Scrophulariaceae	Penstemon	thompsoniae		PETH	List 1B (2-1-3)	S2.3	PR, GR	perennial, dies back	soils between boulders, upper bajada, pj woodland transition	moderate	?	FU, SUP - needs mapped and avoidance	endemic	x

Scrophulariaceae	Penstemon	utahensis		PEUT	List 2 (2-1-1)	S2.3	NY	perennial, dies back	washes in pj woodland	moderate	?	SUP - needs avoidance	variable locations overtime	
Scrophulariaceae	Penstemon	stephensii		PEST	List 1B (2-1-3)	S2.3	PR, GR	perennial, dies back	soils between boulders, upper bajada, pj woodland transition	moderate	?	FU, SUP - needs mapped and avoidance	collections from Hole in the Wall (RSABG); extremely limited distribution; approx. 80% of known distrib. Occurs in Providence Mtns; any impacts will be significant.	x
Hydrophyllaceae	Phacelia	coerulea		PHCO	List 2 (3-1-1)	S1.3	NY, CL, Castle Pks	annual	variable habitats, rocky habitats, washes	low	seedbank	SUP, FU - no issue	widely scattered	
Pinaceae	Pinus	edulis		PIED	List 3 (3-1-1)	S1.3?	NY	pinyon pine	canyons, pj woodlands	high	low tolerance	SUP - needs mapped and avoidance	Known to 4th of July Cyn	
Polygalaceae	Polygala	acanthoclada		POAC	List 2 (2-1-1)	S2.3	NY	low growing perennial shrub	pj woodland, sagebrush steppe	high	?, probably not	SUP - needs mapped and avoidance		
Fabaceae	Robinia	neomexicana		RONE	List 2 (3-1-1)	S1.3	MH (introduced?)	perennial, small tree	near water, woodlands along creekbed	high	not tolerant	SUP - needs mapped and avoidance	only known location if Mojave Desert; may not survive fire; seed does not persist in seedbank; may be rhizomatous.	
Asteraceae	Sanvitalia	abertii		SAAB	List 2 (3-2-1)	S1S2	CL, NY	summer annual	sagebrush steppe, low cover of juniper	high	seedbank	SUP, FU - protect soils	Summer annual; flowers Aug-Sept; first species to monitor to observe fire effects	
Asteraceae	Schkuhria	multiflora	var. multiflora	SCMU	List 2 (3-1-1)	S1.3	NY, MH	summer annual	sagebrush steppe, low cover of juniper	high	seedbank	SUP, FU - protect soils	Summer annual; flowers Aug-Sept; first species to monitor to observe fire effects	
Dryopteridaceae	Woodsia	plummerae		WOPL	List 2 (3-1-1)	S1.3	NY	perennial fern	limestone cliffs and crevices	low	probably not tolerant	not mapped and avoidance		

Affected by burn? X=yes, p=potentially
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BURNED AREA EMERGENCY STABILIZATION PLAN

HACKBERRY COMPLEX

PUBLIC SAFETY RESOURCE ASSESSMENT

I. OBJECTIVES

Identify and mitigate public safety hazards resulting from fire damage.

II. ISSUES

- Fire damaged trees that pose a safety hazard to Mojave National Preserve (MNP) visitors within the Mid Hills Campground and along the Seven Mile Trail.
- Traffic safety signs, road and trail directional signs, and a campground safety information board damaged by the fire, creating an immediate safety hazard to motorists and hikers.
- Fire-damaged fences along roads and trails may pose a risk to MNP staff and visitors (the need for fence construction or reconstruction for vegetation reestablishment is addressed in the Vegetation Assessment).
- Potential risk to public safety from hazardous materials at fire-damaged homes.
- Damage to campground developments in Mid Hills Campground.
- Potential increased risk to public safety resulting from fire-damaged abandoned mine shafts and associated hazardous materials (this issue is addressed in the Mine Safety Assessment).

III. OBSERVATIONS

A. Background

The MNP General Management Plan describes signing and other visitor use strategies to provide for public safety along roadways and trails, and within campgrounds and other developed sites. The following public safety-related management direction is derived from the General Management Plan:

- It is the intent of management policy to provide for visitor use and safety while minimizing conflicts with valid existing rights, permitted uses, general recreation, and maintenance of facilities.
- Minimal signing is used in concert with a variety of media to provide MNP visitors with critical health and safety information. This policy is established to maintain the natural character of the MNP while adequately providing for public safety in a remote and potentially harsh desert environment.
- Campgrounds will be managed to minimize or avoid impacts to sensitive wildlife, soil, water, cultural, and other resources. Management actions may range from a variety of use restrictions to closure.
- The Terms and Conditions of Special Use Permit for Grazing (October 21, 1995) lists the responsibilities of the government and permittee for

maintenance and removal of range improvements. The Draft Livestock Management Plan for the MNP (July 29, 2004) provides locations and standards for fencing on MNP lands.

B. Reconnaissance Methodology and Results

An initial briefing was conducted with the MNP Superintendent and Natural Resource staff on Monday, June 27, 2005. Additionally, MNP staff interacted with the Burned Area Emergency Response (BAER) team at daily briefings and in various individual and small group discussions. Through these contacts the above-listed public safety-related issues were relayed to the BAER team.

The BAER team Operations, Vegetation, and Environmental Compliance specialists conducted field reconnaissance of tree hazards and fire-damage to signs, fences, and recreational facilities. Reconnaissance methods consisted of helicopter overflight, roadside surveys, and intensive ground survey of developed recreation sites, potential hazardous material sites, identified trails, and fence lines considered pertinent to the identified issues.

In accordance with direction received from the MNP, tree hazards were identified within the Mid Hills Campground, and along Seven Mile Trail. Tree hazards were rated using the National Park Service (NPS) Tree Hazard Rating Guide. Trees were designated as hazards only if they posed a definite and immediate threat to campsites, roads, or trails which receive a high frequency of use by the public. Because of the value placed on the remaining tree shading within campsites, structurally sound trees with any potential for survival were not designated for removal. Also, many additional fire damaged trees occur in nearby areas that likewise were not designated for removal. These sites should be reevaluated at least annually to identify additional tree hazards resulting from subsequent tree mortality and structural weakness.

The types and conditions of signs, fences, and other improvements were noted and locations were recorded using a combination of field mapping and global positioning system (GPS) technology. Spatial data was incorporated into the BAER geographic information system (GIS) database. Fire damage to signs was evaluated along MNP roads and trails. Signs were not evaluated along private and County roads, for which the MNP has no authority. Likewise, fences and potential hazardous material sites located outside of MNP lands were not evaluated.

The MNP Hazardous Materials Specialist was contacted regarding potential locations of hazardous materials. He was not aware of any such sites on MNP lands affected by the fire (Dave Burdette, personal communication). The MNP Field Archaeologist noted that a cabin on MNP lands (Winkler Cabin) burned in the fire (Dave Nichols, personal communication). A field reconnaissance was conducted of the site. A total of 11 home sites on private lands sustained fire damage. These sites were not evaluated since they fall outside the scope of this assessment.

Field reconnaissance was initiated on June 26, 2005 and completed on July 1, 2005.

C. Findings

Tree Hazards

A total of 67 tree hazards were identified within Mid Hills Campground and along the Seven Mile Trail. Nearly all identified tree hazards consisted of pinyon pine (*Pinus monophylla*), a few junipers (*Juniperus utahensis*) were also designated. Tree hazards were delineated with pink flagging. The following table indicates the number and size of trees designated at each site.

Location	Diameter at Root Collar (inches)	Number
----------	----------------------------------	--------

Mid Hills Campground	6	3
Mid Hills Campground	8	10
Mid Hills Campground	10	13
Mid Hills Campground	12	11
Mid Hills Campground	14	17
Mid Hills Campground	16	4
Mid Hills Campground	18	2
Mid Hills Campground	20	3
Seven Mile Trail	10	1
Seven Mile Trail	14	2
Seven Mile Trail	16	1

Safety and Directional Signs

A total of 33 traffic safety and direction signs and trail markers were damaged by fire on MNP lands. The following table indicates the number of signs by type. Sign location is identified on the Treatments Map (Appendix IV).

Type of Sign	Number
Carsonite Trail Markers	17
Traffic Warning Signs	10
Stop Signs	1
Mileage/Directional Signs	4
Campground Safety Information Board	1

Consumption of vegetation along the Seven Mile Trail has rendered the path less identifiable to MNP visitors. This may result in hikers straying from the trail and increase their exposure to unsafe conditions such as mine shafts, down fences, and steep, unstable terrain. It may also contribute toward resource damage as hikers create multiple paths along the trail or wander into sensitive areas, such as springs or cultural resource sites. Additional signing may be required to mitigate this situation.

Increased dust levels may pose a safety hazard to MNP visitors over the short term until vegetation becomes reestablished. The Soils and Watershed Assessment addresses impacts from increased dust levels.

As repairs are initiated, additional signs and markers may be required to control visitor use and protect fire-impacted areas. A supplemental funding request may be required in this instance to adequately provide for public safety.

Hazardous Fire-Damaged Fences

A total of 1.5 miles of fire-damaged fences were identified in public areas adjacent to high-use roads and trails. These consist of wood post fences that are partially consumed by fire. When vegetation becomes reestablished, the down wire, partially obscured by vegetation, will become a potential hazard to motorists and hikers in these areas. The majority of this concern occurs along the Wild Horse Canyon Road, with additional areas identified where the Seven Mile Trail intersects burned pasture fences, as indicated on the Treatments Map (Appendix IV).

Additional burned, down fences occur throughout portions of the fire area. Because of their remote locations, these fences are not considered direct hazards to MNP visitors, and therefore, were not considered under Emergency Stabilization. These fences, however, may pose a risk to dispersed recreationists, MNP staff, ranchers, livestock, and wildlife.

As vegetation has been removed, visitors will have opportunity to access additional lands. Further evaluation may be required to ensure downed fences do not pose a significant threat to life or property.

Hazardous Materials

No obvious hazardous materials were observed at the Winkler Cabin site. No other potential hazardous material sites on MNP lands were identified.

Campground Damage

Fire damage to Mid Hills campground public safety and information signs have been addressed above. The campground also sustained substantial damage to recreational facilities, including picnic tables and campsite markers. These impacts are considered outside the scope of Emergency Stabilization (ES), and are not addressed in this assessment. However, recorded observations of damage to these facilities of potential use for subsequent rehabilitation planning have been included in Appendix V.

Mine Shafts

Three abandoned mine sites were observed in the course of Public Safety reconnaissance. It is apparent that mine timbers were damaged by the fire at two of these sites. Affects of the fire on these and other mine shafts and related public safety issues are addressed in the Mine Safety Assessment.

IV. Recommendations

A. Emergency Stabilization

Tree Hazards

Mitigate 67 tree hazards in Mid Hills Campground and along the Seven Mile Trail. Trees will be felled and stumps flush cut. Stems will be bucked in firewood-size sections. In the campground, tops and limbs will be chipped, along the trail, they will be lopped and scattered. Detailed treatment methods and costs are included in the Tree Hazard Mitigation Specification. Location of tree hazards is indicated on the Treatments Map.

Fire damaged trees in high use recreation areas should be monitored on an annual basis to identify additional hazards resulting from subsequent tree mortality and structural weakness.

Safety and Directional Signs

Replace 32 traffic safety and direction signs and trail markers damaged by fire, and 1 campground safety information board to alert recreationists of public safety hazards. Install 15 additional markers along the Seven Mile Trail as needed. Install 5 "Dust Warning" signs to alert MNP visitors (see Soils and Watershed Assessment and Treatments Map for locations). The Replace and Install Public Safety Signs Specification details materials and methods for signing.

Hazardous Fire-Damaged Fences

Remove approximately 1.5 miles of fire-damaged fence from identified high public use areas. Fence wire and posts should be completely removed from these sites.

Fence removal is addressed in the Fence Enclosure Specification. The locations of fence removal areas are depicted on the Treatments Map (Appendix IV).

B. Non-Specification Related

Repair or Remove Additional Fire-Damaged Fence

The MNP may consider repairing or removing all other fence damaged by the fire. The responsibility for this will be determined through the Terms and Conditions of Special Use Permit for Grazing. This could be addressed in a subsequent Rehabilitation Plan.

Repair Campground Facilities

V. CONSULTATIONS

Rob Blair	Livestock Permittee	7IL Ranch	(760) 928-2564
Kate Blair	Maintenance Worker	MNP	(760) 252-6100
Sandee Dingman	Biologist	MNP	(760) 252-6147
Chuck Heard	Fire Management Officer	MNP	(760) 252-6132
Larry Whalon	Chief Resources Management	MNP	(760) 252-6101
Lisa Wilson	Administrative Officer	MNP	(760) 252-6101
Dave Nichols	Field Archaeologist	MNP	(760) 219-1239
Dave Burdette	Hazardous Materials Specialist	MNP	(760) 252-6147
James Woolsey	Chief Interpretation	MNP	(760) 252-6120

VI. REFERENCES

The following references are included in the Appendix:

- Cost Estimates for Mid Hills Campground Safety Information Board (FAX from James Woolsey, Chief Interpretation, MNP)

The following references can be found on file at the MNP Headquarters (2701 Barstow Road, Barstow, CA 92311):

- Draft Landscape Inventory and Assessment 7IL Ranch, March 31, 2005
- Memorandum Updating Cost Estimates and DOI Emphasis for FY 2008-2010 Line Item Construction and Change in Operating Costs (March 4, 2005)
- General Management Plan, Mojave National Preserve
- Draft Livestock Management Plan for the Mojave National Preserve
- Gold Valley Allotment Data (April 1994)
- Allotment Management Plans for Colton Hills and Gold Valley
- Mojave National Preserve Environmental, Health and Safety Program

The following references were used to determine suppliers and costs of sign materials and are available via the internet:

- Manual of Traffic Signs (www.trafficsign.us)
- Hansen Supply (www.shophansensupply.com)
- Surv-Kap (www.surv-kap.com)

Maurice Williams, BAER Operations, Bureau of Indian Affairs, Fort Apache Agency, (928) 338-5310

Hal Luedtke, BAER Vegetation, Bureau of Indian Affairs, Southwest Regional Office, (505) 563-3303

BURNED AREA EMERGENCY STABILIZATION PLAN
HACKBERRY COMPLEX

APPENDIX II COMPLIANCE

- **Environmental Compliance Considerations and Documentation**
- **NEPA Environmental Screening Form and Categorical Exclusion**



INTERAGENCY BURNED AREA EMERGENCY STABILIZATION PLAN
Hackberry Complex
Environmental Compliance Considerations and Documentation

A. FEDERAL, STATE, AND PRIVATE LANDS ENVIRONMENTAL COMPLIANCE RESPONSIBILITIES

All projects proposed in the Hackberry Complex Interagency Burned Area Emergency Stabilization Plan that are prescribed, funded, or implemented by Federal agencies on Federal, State, or private lands are subject to compliance with the *National Environmental Policy Act* (NEPA) in accordance with the guidelines provided by the *Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)*. This Appendix documents the Interagency Burned Area Emergency Response (BAER) Team considerations of NEPA compliance requirements for prescribed emergency stabilization and monitoring actions described in this plan for areas affected by the Hackberry Complex Fires on the Mojave National Preserve (Preserve) in San Bernardino County.

This plan identifies specific emergency stabilization, rehabilitation, and monitoring actions and recommendations designed to mitigate damages to resources as a result of the Hackberry Complex Fires and associated fire suppression activities. The Preserve must complete separate NEPA analyses and compliance for fire response activities not addressed in this plan.

This plan has been developed by an Interagency BAER Team comprised of representatives from the: Bureau of Indian Affairs (BIA), National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS) and U.S. Forest Service (USFS). The Team consulted with numerous other agencies, organizations, and individuals with subject matter expertise applicable to the proposed treatments (see consultation section below).

Agency Specific Guidance: This NEPA documentation has been developed in accordance with National Park Service specific guidelines. Emergency stabilization actions proposed on National Park Service lands, involving the agencies permitting, funding, or implementation, must comply with regulations set forth in the *Department of the Interior Manual Part 516 (DM 12)*.

B. RELATED PLANS AND CUMULATIVE IMPACTS ANALYSIS

Mojave National Preserve General Management Plan and Environmental Impact Statement 2000: The Mojave National Preserve GMP provides management guidance and identifies land use decisions for preservation of the area's resources on the Mojave National Preserve, San Bernadino County, California.

Mojave National Preserve Fire Management Plan (Draft): The BAER Team Environmental Protection Specialist reviewed the Fire Management Plan and associated Environmental Assessment and determined that actions proposed in the Hackberry Complex Burned Area Emergency Stabilization Plan are consistent with the management objectives established in the FMP for emergency stabilization and rehabilitation.

Reference Manual (Director's Order) #41: Wilderness Preservation and Management (1999): Director's Order #41 provides guidance, accountability, consistency and continuity to the National Park Service's wilderness management program.

Principles for Wilderness Management in the California Desert (Desert Wilderness Annexes): The Desert Wilderness Annexes provide a consistent management policy for

DOI agencies to manage California Desert Wildernesses. Proposed emergency stabilization actions are consistent with the principles of the Desert Wilderness Annexes.

Cumulative Impact Analysis: Cumulative effects are the environmental impacts resulting from the incremental impacts of a proposed action, when added to other past, present, and reasonably foreseeable future actions, both Federal and nonfederal. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The emergency stabilization treatments for the Hackberry Complex Fires, as proposed in this plan, do not result in an intensity of impact (i.e. major ground disturbance, etc.) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above jurisdictional management plans and associated environmental compliance documents of the NPS, and categorical exclusions listed below.

No direct or indirect unavoidable adverse impacts to the biological or physical environment would result from the implementation of this Hackberry Complex Burned Area Emergency Stabilization Plan. The implementation of emergency watershed stabilization treatments proposed in the plan would not result in any adverse effect on the burned area or areas downstream. Conversely, implementation of the plan would be expected to result in a cumulatively beneficial effect by reducing erosion and improving water quality within the burned area.

C. APPLICABLE LAWS AND EXECUTIVE ORDERS

This section documents consideration given to the requirements of specific environmental laws in the development of the Hackberry Complex Burned Area Emergency Stabilization Plan. Specific consultations initiated or completed during development and implementation of this plan are also documented. The following executive orders and legislative acts have been reviewed as they apply to the Hackberry Complex Burned Area Emergency Stabilization Plan.

1. **National Historic Preservation Act (NHPA).** The BAER Team Cultural Resources Specialists have contacted the California State Historic Preservation Office (SHPO) regarding activities proposed within the Hackberry Complex Burned Area Emergency Stabilization Plan.
2. **Executive Order 11988, Floodplain Management.** All proposed treatments are in compliance with this order.
3. **Executive Order 11990, Protection of Wetlands.** All proposed treatments are in compliance with this order.
4. **Executive Order 12372, Intergovernmental Review.** Coordination and consultation is ongoing with affected Tribes, Federal, and local agencies. A copy of the plan will be disseminated to all affected agencies.
5. **Executive Order 12892, Federal actions to address Environmental Justice in Minority and Low-Income Populations.** All Federal actions must address and identify, as appropriate, disproportionately high and adverse human health or low-income populations, and Indian Tribes in the United States. The BAER Team has determined that the actions proposed in this plan will result in no adverse human health or environmental effects for minority or low-income populations and Indian Tribes.
6. **Endangered Species Act.** The BAER Team wildlife biologist and vegetation specialist have consulted with the U.S. Fish and Wildlife Service regarding actions

proposed in this plan and potential effects on state and Federally listed species and have determined that there is no effect. The Preserve is responsible for continued consultations during plan implementation.

7. **Clean Water Act.** All proposed treatments are in compliance with this Act. Long-term impacts are considered beneficial to water quality.
8. **Clean Air Act.** Federal Ambient Air Quality Primary and Secondary Standards are provided by the National Ambient Air Quality Standards, as established by the U.S. Environmental Protection agency (EPA) (Clean Air Act, 42 U.S.C. 7470, et seq., as amended). The BAER Team has determined that treatments prescribed in the Hackberry Complex area will have short-term minor impacts to air quality that would not differ significantly from routine land use practices for the area.
9. **Desert Wilderness Annex.** The appropriate BAER Team resource and operations specialists have consulted with the Preserve regarding actions proposed in this plan and potential effects to the wilderness areas. All treatments or emergency stabilization actions are proposed in the wilderness will be accomplished using 'minimal tools' and all prohibited activities/uses will be avoided including use of mechanized tools and transport. Non-native invasive plants treatments will have long term beneficial effects on wilderness values.

D. APPLICABLE AND RELEVANT CATEGORICAL EXCLUSIONS

All treatment actions proposed in this plan are Categorical Exclusions from further environmental analysis as provided for in the Department of Interior Manual Part 516. All applicable and relevant DOI and NPS Categorical Exclusions are listed below. Categorical Exclusion decisions were made with consideration given to the results of required emergency consultations completed by the BAER Team and documented in Section E below.

Applicable Department of the Interior Categorical Exclusions

Part 516 DM 2, App. 1.1	Personnel actions and investigations and personnel services contracts.
Part 516 DM 2, App. 1.4	Departmental legal activities including, but not limited to, such things as arrests, investigations, patents, claims, and legal opinions. This does not include bringing judicial or administrative civil or criminal enforcement actions which are outside the scope of NEPA in accordance with 40 CFR 1508.18(a).
Part 516 DM 2, App. 1.5	Non-destructive data collection, inventory (including field, aerial and satellite surveying and mapping), study, research and monitoring activities.
Part 516 DM 2, App. 1.6	Routine and continuing government business, including such things as supervision, administration, operations, maintenance and replacement activities having limited context and intensity; e.g. limited size and magnitude or short-term effects.
Part 516 DM 2, App. 1.9	Policies, directives, regulations and guidelines that are of an administrative, financial, legal, technical or procedural nature and whose environmental effects are too broad,

speculative or conjectural to lend themselves to meaningful analysis and will later be subject to the NEPA process, either collectively or case-by-case.

Part 516 DM 2, App. 1.10

Activities which are educational, informational, advisory or consultative to other agencies, public and private entities, visitors, individuals or the general public.

Part 516 DM 2, App. 1.12

Post-fire rehabilitation activities not to exceed 4,200 acres (such as tree planting, fence replacement, habitat restoration, heritage site restoration, repair of roads and trails, and repair of damage to minor facilities such as campgrounds) to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire. Such activities: Shall be conducted consistent with agency and Departmental procedures and applicable land and resource management plans; Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and Shall be completed within three years following a wildland fire.

Applicable National Park Service Categorical Exclusions (516, DM 12.5):

516 DM 12.5 A(9)

Preparation and issuance of publications.

516 DM 12.5 B(4)

Plans, including priorities, justifications and strategies, for non-manipulative research, monitoring, inventorying and information gathering.

516 DM 12.5 B(9)

Adoption or approval of surveys, studies, reports, plans and similar documents which will result in recommendations or proposed actions which would cause no or only minimal environmental impact.

516 DM 12.5 B(10)

Preparation of internal reports, plans, studies and other documents containing recommendations for action which NPS develops preliminary to the process of preparing a specific Service proposal or set of alternatives for decision.

516 DM 12.5 B(11)

Land protection plans which propose no significant change to existing land or visitor use.

516 DM 12.5 C(3)

Routine maintenance and repairs to non-historic structures, facilities, utilities, grounds and trails.

516 DM 12.5 C(4)

Routine maintenance and repairs to cultural resource sites, structures, utilities and grounds under an approved Historic Structures Preservation Guide or Cyclic Maintenance Guide; or if the action would not adversely affect the cultural resource.

516 DM 12.5 C(5)

Installation of signs, displays, kiosks, etc.

516 DM 12.5 C(6)	Installation of navigation aids.
516 DM 12.5 C(8)	Replacement in kind of minor structures and facilities with little or no change in location, capacity or appearance.
516 DM 12.5 C(9)	Repair, resurfacing, striping, installation of traffic control devices, repair/replacement of guardrails, etc., on existing roads.
516 DM 12.5 C(12)	Minor trail relocation, development of compatible trail networks on logging roads or other established routes, and trail maintenance and repair.
516 DM 12.5 C(17)	Construction of minor structures, including small improved parking lots, in previously disturbed or developed areas.
516 DM 12.5 C(18)	Construction or rehabilitation in previously disturbed or developed areas, required to meet health or safety regulations, or to meet requirements for making facilities accessible to the handicapped.
516 DM 12.5 C(19)	Landscaping and landscape maintenance in previously disturbed or developed areas.
516 DM 12.5 C(20)	Construction of fencing enclosures or boundary fencing posing no effect on wildlife migrations.
516 DM 12.5 D(2)	Minor changes in amounts or types of visitor use for the purpose of ensuring visitor safety or resource protection in accordance with existing regulations.
516 DM 12.5 E(2)	Day-to-day resource management and research activities.
516 DM 12.5 E(3)	Designation of environmental study areas and research natural areas.
516 DM 12.5 E(4)	Stabilization by planting native plant species in disturbed areas.
516 DM 12.5 E(6)	Restoration of noncontroversial native species into suitable habitats within their historic range, and elimination of exotic species.
516 DM 12.5 E(7)	Removal of park resident individuals of non-threatened/endangered species which pose a danger to visitors, threaten park resources or become a nuisance in areas surrounding a park, when such removal is included in an approved resource management plan.
516 DM 12.5 E(8)	Removal of non-historic materials and structures in order to restore natural conditions.

E. CONSULTATIONS

National Park Service –

Mary Martin, Superintendent, Mojave National Preserve
Larry Whalon, Chief of Resource Management, Mojave National Preserve
Sandee Dingman, Biologist, Mojave National Preserve
Dave Nichols, Archaeologist, Mojave National Preserve
Dannette Woo, Compliance Specialist, Mojave National Preserve

Bureau of Land Management

Alicia Rabas, Wildlife Biologist

California State Historic Preservation Office

Dwight Dutschke, Cultural Resource Program

U.S. Fish and Wildlife Service

Brian Croft, Wildlife Biologist, Ventura Field Office

NEPA Environmental Screening Form and Categorical Exclusion Documentation
Hackberry Complex Burned Area Emergency Stabilization Plan
Mojave National Preserve

A. Project Information

Park Name Mojave National Preserve

Project Type (Check):

- | | | | |
|---|--|--|-------------------------------|
| <input type="checkbox"/> Cyclic | <input type="checkbox"/> Cultural Cyclic | <input type="checkbox"/> Repair/Rehab | <input type="checkbox"/> ONPS |
| <input type="checkbox"/> NRPP | <input type="checkbox"/> CRPP | <input type="checkbox"/> FLHP | |
| <input type="checkbox"/> Line Item | <input type="checkbox"/> Fee Demo | <input type="checkbox"/> Concession Reimbursable | |
| <input checked="" type="checkbox"/> Other | | | |

Project Originator/Coordinator Interagency Burned Area Emergency Response Team

Project Title Hackberry Complex Burned Area Emergency Stabilization Plan

Contract # N/A

Contractor Name N/A

Administrative Record Location Headquarters

Administrative Record Contact Barbara Schneider

B. PROJECT DESCRIPTION/LOCATION *(To begin the statutory compliance file, attach to this form maps, site visit notes, agency consultation, data, reports, categorical exclusion form (if relevant), or other relevant materials.)*

Desert Tortoise Critical Habitat? ☒ Yes ☐ No

Designated Wilderness? ☒ Yes ☐ No

Previously Disturbed Land? ☒ Yes ☐ No

Project Location (Include maps with GPS information, road names, nearby landmarks, distance from road with orientation, other details) See Plan

Description of Activity: See Plan

Methods: See Plan

Equipment: See Specifications in Plan

Mechanized/Motorized Equipment: See Plan

Acreage: See Specifications

Follow-up: See Specifications. Implementation will be tracked in the NFORS database as per interagency policy.

Statement of Issues: Why is the project necessary? To address potential threats to life and property and critical natural and cultural resources as a result of the 71,000 acre Hackberry Complex fires.

Preliminary drawings attached? ☒ Yes ☐ No

Background info. Attached? ☒ Yes ☐ No

Anticipated compliance completion date 7/05/05

Projected advertisement/Day labor start 7/15/05

Project Start Date 7/06/05

C. RESOURCE EFFECTS TO CONSIDER *(Tailor the following to meet individual park/unit project needs.)*

Are any measurable ¹ impacts possible on the following physical, natural, or cultural resources?	Yes	No	Data Needed to Determine
1. Geological resources – soils, bedrock, streambeds, etc.		X	
2. From geohazards		X	
3. Air quality		X	
4. Soundscapes		X	
5. Water quality or quantity		X	
6. Streamflow characteristics		X	
7. Marine or estuarine resources		X	
8. Floodplains or wetlands		X	
9. Land use, including occupancy, income, values, ownership, type of use		X	
10. Rare or unusual vegetation – old growth timber, riparian, alpine		X	
11. Species of special concern (plant or animal; state or federal listed or proposed for listing) or their habitat		X	
12. Unique ecosystems, biosphere reserves, World Heritage Sites		X	
13. Unique or important wildlife or wildlife habitat		X	
14. Unique or important fish or fish habitat		X	
15. Introduce or promote non-native species (plant or animal)		X	
16. Recreation resources, including supply, demand, visitation, activities, etc.	X		
17. Visitor experience, aesthetic resources		X	
18. Cultural resources including cultural landscapes, ethnographic resources		X	

¹ Measurable impacts are those that the interdisciplinary team determines to be greater than negligible by the analysis process described in DO-12 §2.9 and §4.5(G)(4) to (G)(5).

Are any measurable ¹ impacts possible on the following physical, natural, or cultural resources?	Yes	No	Data Needed to Determine
19. Socioeconomics, including employment, occupation, income changes, tax base, infrastructure		X	
20. Minority or low income populations, ethnography, size, migration patterns, etc.		X	
21. Energy resources		X	
22. Other agency or tribal land use plans or policies		X	
23. Resource, including energy, conservation potential		X	
24. Urban quality, gateway communities, etc.		X	
25. Long-term management of resources or land/resource productivity		X	
26. Other important environment resources (e.g., geothermal, paleontological resources)?		X	
27. Night sky		X	
28. Wilderness		X	

D. MANDATORY CRITERIA

Mandatory Criteria (A-N). Would the proposal, if implemented:	Yes	No	Data Needed to Determine
A. Have material adverse effects on public health or safety?		X	
B. Have adverse effects on such unique characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands; floodplains; or ecologically significant or critical areas, including those listed on the National Register of Natural Landmarks?		X	
C. Have highly controversial environmental effects?		X	
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?		X	
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?		X	
F. Be directly related to other actions with individually insignificant, but cumulatively significant, environmental effects?		X	
G. Have adverse effects on properties listed or eligible for listing on the National Register of Historic Places?		X	
H. Have adverse effects on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have adverse effects on designated Critical Habitat for these species?		X	

Mandatory Criteria (A-N). Would the proposal, if implemented:	Yes	No	Data Needed to Determine
I. Require compliance with Executive Order 11988 (Floodplain Management), Executive Order 11990 (Protection of Wetlands), or the Fish and Wildlife Coordination Act?		X	
J. Threaten to violate a federal, state, local, or tribal law or requirement imposed for the protection of the environment?		X	
K. Involve unresolved conflicts concerning alternative uses of available resources (NEPA sec. 102(2)(E)?		X	
L. Have a disproportionate, significant adverse effect on low income or minority populations (EO 12898)?		X	
M. Restrict access to and ceremonial use of Indian sacred sites by Indian religious practitioners or adversely affect the physical integrity of such sacred sites (EO 130007)?		X	
N. Contribute to the introduction, continued existence, or spread of federally listed noxious weeds (Federal Noxious Weed Control Act)?		X	
O. Contribute to the introduction, continued existence, or spread of non-native invasive species or actions that may promote the introduction, growth or expansion of the range of non-native invasive species (EO 13112)?		X	
P. Require a permit from a federal, state, or local agency to proceed, unless the agency from which the permit is required agrees that a CE is appropriate?		X	
Q. Have the potential for significant impact as indicated by a federal, state, or local agency or Indian tribe?		X	
R. Have the potential to be controversial because of disagreement over possible environmental effects?		X	
S. Have the potential to violate the NPS Organic Act by impairing park resources or values?		X	
T. Involve Integrated Pest Management (IPM)?		X	

E. OTHER INFORMATION

(Please answer the following questions/provide requested information.)

Are the personnel preparing this form familiar with the site? ☒ Yes ☐ No

Did personnel conduct a site visit? (See Unit Logs) ☒ Yes ☐ No
(If yes, attach meeting notes or additional pages noting when site visit took place, who attended, etc.)

Is the project in an approved plan such as a General Management Plan or an Implementation Plan with an accompanying environmental document? ☐ Yes ☒ No

If yes, plan name _____

Is the project still consistent with the approved plan? ☐ Yes ☐ No
(If no, prepare plan/EA or EIS)

Is the environmental document accurate and up-to-date? ☐ Yes ☐ No
(If no, prepare plan/EA or EIS.)

FONSI ☐ ROD ☐ (Check) Date approved _____

Are there any interested or affected agencies or parties? ☒ Yes ☐ No
Did you make a diligent effort to contact them? ☒ Yes ☐ No

Has consultation with affected agencies or tribes been completed? ☒ Yes ☐ No
(If so, attach additional pages detailing the consultation, including the name, the dates, and a summary of comments from other agencies or tribal contacts.)

Are there any connected, cumulative, or similar actions as part of the proposed action? ☐ Yes ☒ No
(If so, attach additional pages detailing the other actions.)

F. INSTRUCTIONS FOR DETERMINING APPROPRIATE NEPA PATHWAY

Complete the following tasks: conduct a site visit or ensure that staff is familiar with the site's specifics; consult with affected agencies, and/or tribes; and interested public and complete this environmental screening form.

If your action is not described in DO-12 § 3.4 or if you checked yes or identified "data needed to determine" impacts in any bloc in Section D (Mandatory Criteria), you must prepare an environmental assessment or environmental impact statement.

If you checked no in all blocks in Section C (resource effects to consider) and checked no in all blocks in Section D (Mandatory Criteria) and if the action is described in DO-12 § 3.4, you may proceed to the categorical exclusion form. (Appendix 2 of DO-12 Handbook)

G. SUPERVISORY SIGNATORY

Based on the environmental impact information contained in the statutory compliance file and in this environmental screening form, environmental documentation for the subject project is complete.

Recommended:

BAER Environmental Compliance Specialist	Telephone Number	Date
	(602) 359-3503	

DARRYL MARTINEZ

Approved:

Superintendent	Telephone Number	Date
	(760) 252-6102	

MARY G. MARTIN

BURNED AREA EMERGENCY STABILIZATION PLAN
HACKBERRY COMPLEX

APPENDIX III PHOTO DOCUMENTATION

- **MINE SAFETY ISSUES**
- **CULTURAL RESOURCE ISSUES**
- **SOIL & WATERSHED RESOURCE ISSUES**
- **VEGETATION RESOURCE ISSUES**
- **PUBLIC SAFETY ISSUES**



Cultural Resource Issues



Arastis at Holliman Homestead Site



Counsel Rocks Pictograph



Burned Mine at Holliman Homestead Site



Historic artifacts revealed by Fire



Counsel Rocks Pictographs



Archaeologist examines rock art site

Cultural Resource Issues



Arastis at Holliman Homestead Site



Counsel Rocks Pictograph



Burned Mine at Holliman Homestead Site



Historic artifacts revealed by Fire



Counsel Rocks Pictographs



Archaeologist examines rock art site

Cultural Resource Issues



Holliman Homestead Site



Historic Ranch Site burned over



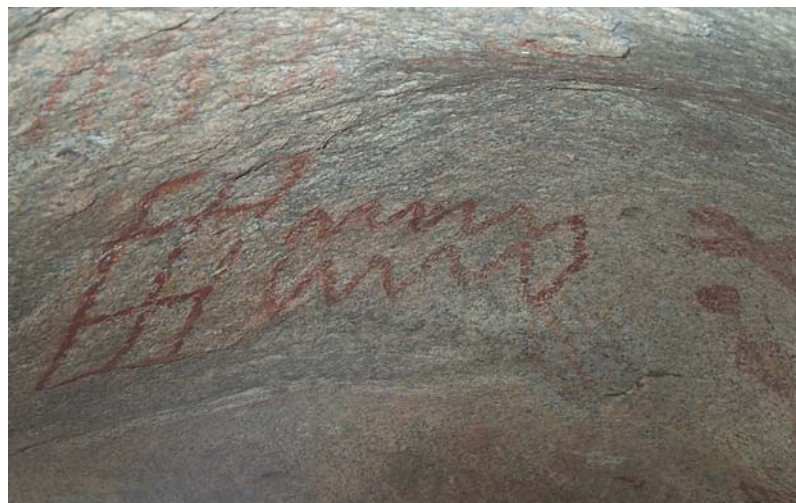
Historic Corral Burned over



Overhang containing rock art has soot blackening the ceiling



Howe Spring Site Overview



Howe Spring Pictograph

Cultural Resource Issues



Pictograph either covered by soot or spalled off of boulder



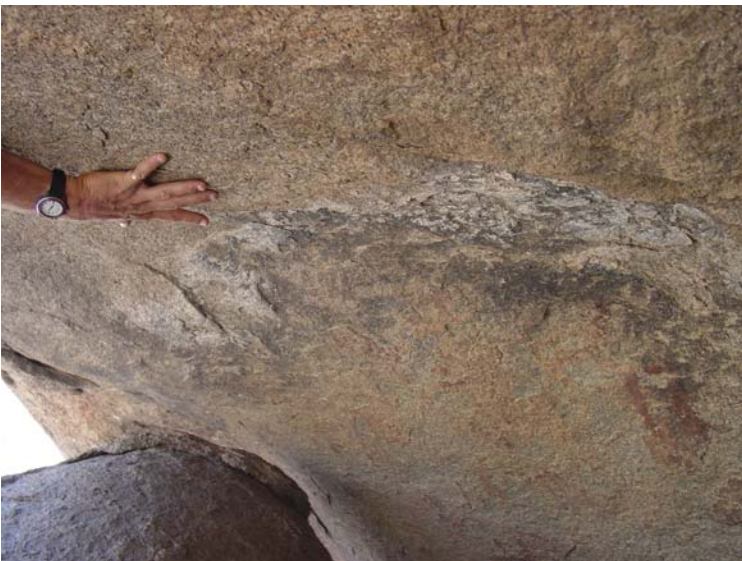
Prehistoric sleeping circle on slope with burro trail going through it



Wood lined well burned by fire is now safety hazard



Rock Spring Mill Site destroyed by fire

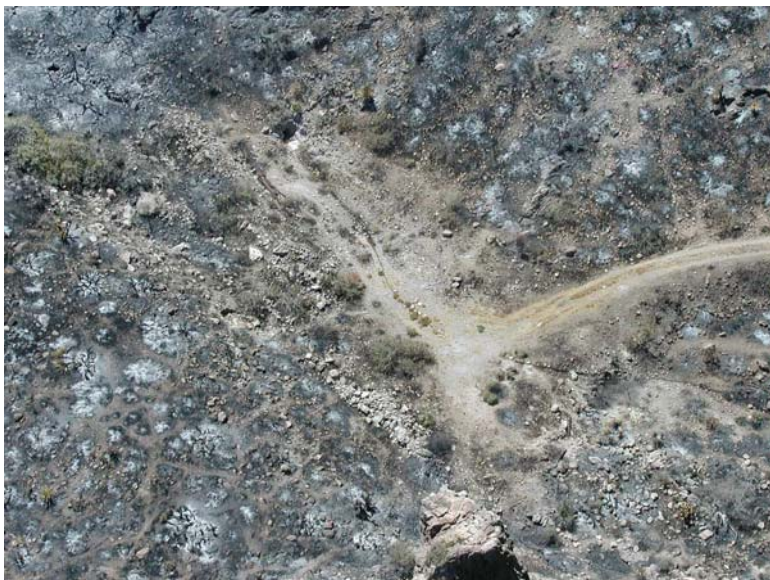


Spalling above pictograph panel and soot blackening on panel



Undocumented historic structures spared from fire

Mine Safety Examples



#581 Impacts indeterminant



414b Shows burned out supports



#424a shows location of burned ore bins



#424c safety fence at shaft



457b shows hourglassing collapse at main shaft



457c Adit, site of modern occupation

Mine Safety Examples



#459c shows burned out support structures



497a example of wash-side well with support members burned away



#497c Open shaft without collar



527c Providance Mine



#527f shows support structures in tact



#570 shows hanging collar with burned out supports

Public Safety Issues



Burned cabin



Burned fence removal



Burned informational Safety Board



Campground facilities



Campground hazard trees



Dust hazard

Public Safety Issues



Mine shafts



Remove burned fence



Replace burned directional sign



Replace burned traffic sign



Replace trail markers



Unburned signs

Vegetation Resources Plant Communities



Buckhorn Cholla community



High Mortality in Mid-elevation



Incomplete Burn in Sagebrush



Individual Juniper



Replace trail markers



Unburned signs

Vegetation Resources Plant Communities



Low-severity Burn in Mid-Elevation Shrubland



Mojave Yucca Community



Pinyon Cones



Surviving Pinyon Pine



Unburned Adjacent Joshua Tree Woodland



Vegetation Recovery in Old Burn

Vegetation Resources Range-Abandoned Roads



Exposed Abandoned Road 2



Exposed Abandoned Road



Livestock Use



Mid Hills Area



Road closure carsonite burned by fire



Windmill and watering trough

**Vegetation Resources
Rare Plants & Weeds**



Boothe's Primrose (*Camissoni Boothii* ssp. *Boothii*)



Cima Milk-vetch (*Astragalus vimae* var. *cimae*)



Registered tallest Mojave yucca



Throne's buckwheat (*Eriogonum thornei*)



Saharan Mustard (*Brassica tournefortii*)
invades disturbed area



Salt Cedar (*Tamarix ramossima*)
infests moist sites

Soil & Watershed Issues



Aerial view of mixed burn severity throughout fire area. Pinto Mountain in foreground; Round Valley in the background.



Example of moderate soil burn severity



Example of low soil burn severity



Charred grasses observed in low soil burn



Reduced visibility due to dust



Dust devil